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in gastro-intestinal disorders

AMPHOJEL
in uncomplicated peptic ulcer

ALUDROX
in peptic ulcer when constipation is a factor

AMPHOJEL S-A
in peptic ulcer — rapid and prolonged relief of severe pain

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A. To permit individual patient management—treatment for a specific condition as diagnosed by the physician.

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The Manitoba Medical Review

Vol. 41 MAY, 1961 No. 5

Special Articles

Winnipeg — A Medical Research Centre

Harold Davies, M.D.

In reading the medical literature it would seem, at first glance, that very little frontier work is being done in Canada. Similarly, most Manitoba doctors have little conception of the research in progress in Winnipeg. I was amazed at the number of investigators, the scope of the projects, and the amount of special equipment in use here. This presentation is a partial listing of the researchers, their projects, and equipment from the various departments, i.e., Departments of Pharmacology and Therapeutics; Bacteriology and Immunology; Surgery; General Hospital; Deer Lodge Hospital; St. Boniface Hospital; Children's Hospital.

There is considerable interlocking of personnel in the various sections of the Children's Hospital, General Hospital and Medical College. Therefore there will be some repetition of names from seemingly unrelated departments. This bespeaks the interest in basic principles, for example, of a medical man in a project supported by the surgical department.

It may well be that there are Manitoba doctors who would like to participate in research. They would like to know not only with whom and where to make contact, but also a little of the grants which support the various projects. This information has been included where possible, and it is assumed that the various directors have complete control of all these facets.

Department of Pharmacology and Therapeutics, University of Manitoba, Faculty of Medicine

Director of Research — Professor Mark Nickerson.
Site of Research — Manitoba Medical College.
Projects:

The Mechanism of irreversibility in hemorrhagic shock — using radioactive rubidium in dogs — researchers are M. Nickerson and J. T. Gourzis — supported by the Defence Research Board and the Life Insurance Medical Research Fund.

The involvement of adrenergic mechanisms in the effects of bacterial endotoxin — researchers M. Nickerson, J. T. Gourzis and C. Hollenberg — using mice and rabbits — supported by the above.

The protection against hemorrhagic shock—using Dibenzyline in dogs — researchers, M. Nickerson, L. Young and J. Constas—supported by the Defence Research Board and the Manitoba Heart Foundation.

The mechanism of thiocyanate excretion — using trained dogs — researchers M. Nickerson and L. Young — supported by the Manitoba Heart Foundation and the Life Insurance Medical Research Fund.

The mechanism of action of rauwolfia — measuring catecholamine excretion in dogs — researchers M. Nickerson, J. Falk and L. Prychidko—supported by the Manitoba Heart Foundation and Life Insurance Medical Research Fund.

The mechanism of electrolyte - steroid - cardiopathy — using low-potassium diets in rats — researchers M. Nickerson, P. Dresel and G. W. Karr—supported by the National Research Council of Canada and the Life Insurance Medical Research Fund.

The drug-receptor interactions involving smooth muscle responses to autonomic agents — using rabbit aorta in vitro — researchers M. Nickerson and Mortham — supported by National Research Council of Canada, Manitoba Heart Foundation and the Life Insurance Medical Research Fund.

The location and nature of adrenergic receptors — using phenoxybenzamine-C14 and analysis for radioactivity — researchers M. Nickerson and Parmar.

The role of lactate production in adrenaline-induced vasodilatation — using anaesthetized cats and photoelectric drop flow recorder — researchers M. Nickerson, P. Dresel, P. Yue and D. Duncan — supported by the National Research Council of Canada and the Manitoba Heart Foundation.

The role of central nervous system in responses to autonomic drugs — using anaesthetized cats and nerve action potential recording with a cathode ray oscilloscope — researchers A. S. Dontas, M. C. Sutter, M. Nickerson and R. Reiffenstein — supported by National Research Council of Canada and the Manitoba Heart Foundation.

The inhibition of effects of estrogens on anterior pituitary — using female rats and castrated animals — researcher J. Cooch — supported by National Research Council of Canada.

This list continues on to 33. In addition to the above researchers there are: Doctors M. J. Ormerod, K. MacCannell, I. R. Innes, G. B. Frank, F. Inoue, S. I. Yamada, F. S. LaBella, L. H. Cohen, J. Zubek, A. Thomson, A. R. Birt, R. E. Beamish, E. Cuddy, and researchers: G. Beaulieu, W. Chyczewski, C. Reimer, Y. Siegel, C. Fuller, C. Bialek, B. Erickson, R. Kawata, D. Duncan, L. Sealey and W. E. Zuk.

The subjects include many drugs, tissues and mechanisms. Several special instruments have been designed to facilitate the investigations. In addition to the Medical College, research is conducted at the General Hospital and at the Manitoba School, Portage la Prairie. In addition to the above supporters, funds have been made available by the Department of National Health and Welfare, the Riker Laboratories, Canadian Arthritis and Rheumatism Society, the American Heart Association and the Muscular Dystrophy Association of Canada.

Many of these projects will soon be completed, but the problems and the necessary research continue in a fresh direction.

Department of Bacteriology and Immunology, University of Manitoba, Faculty of Medicine

Director — Professor J. Wilt.

Locations — Medical College, Virus Lab, General Hospital, Children's Hospital, Provincial Lab.

Personnel — Doctors P. Warner, C. Hannan, W. Parker, S. Parker, C. Thomas, J. Hoogstraten, L. Lansdown and G. Fox. Researchers G. Wiseman, R. Hay, M. Norris and R. Martin.

Basic virus research — growth cycles in tissue culture — being expanded to utilize the electron microscope — Dr. C. Hannon researcher.

Applied virology — etiology of infantile diarrhea — Doctors W. Parker, J. Hoogstraten, G. Young.

Virulence of staphylococci — hospital hygiene — Doctors P. Warner and S. Parker.

Autoimmunity in thyroid disease — Doctors J. C. Wilt, J. Gemmell, S. Israels, D. Armstrong.

Behaviour of globulin fractions of serum during virus infections — Dr. W. Parker researcher.

The special instruments necessary for these projects include: ultra centrifuge, lyophalizing equipment, phase contrast equipment, fluorescent microscope equipment, ultrasonic apparatus, chromatographic apparatus, and the electron microscope with ultra microtome and shadow caster.

Tissue cultures with human amnion, monkey kidney and HeLa cells have replaced much of the animal work. However, rabbits, guinea pigs and mice are still used.

The sponsors of the research include Federal and Provincial Grants, National Research Council, and the institutions where the research is housed.

Department of Surgery

Director — Professor C. Ferguson.

Location — Medical College, General Hospital, Children's Hospital.

The heart-lung machines for open heart surgery — Dr. W. Zingg — supported by Department of Health and Welfare.

Cardiovascular surgery, using dogs — Doctors C. Ferguson, L. Whitehead and W. Zingg.

The deposition in adipose tissue during immobilization, using animals — Dr. W. Zingg.

The measurement of cardiac output in dogs, using radioactive rabidium — during anaesthesia and thoracotomy — Doctors Ferguson, Zingg, Kinley and Karasewich.

The various methods to induce cardiac arrest and resumption, using dogs — Doctors Ferguson, Zingg, Cumming and Hart.

The use of plastic material in orthopedic surgery, using sheep and calves in the Department of Animal Science (University of Manitoba)—Researchers C. Hollenberg and D. McCoomb.

The effect of plastic ostamer on healing rats — researcher D. McCoomb.

Differential hypothermia, using dogs — researchers S. Cantor and W. Zingg — supported by the Manitoba Heart Foundation.

The cerebral circulation and infarction in dogs — Dr. N. Hill—supported by Manitoba Heart Foundation.

The effect of alkylating agents on dogs — Dr. L. Israels.

The partial perfusion of tumor lethal chemicals — Dr. L. Israels.

The electrolytic changes in urinary extravasation in dogs — Doctors Zingg, E. Karasewich and S. Israels.

All departments require more space for research, but the surgical unit appears to be in desperate need for adequate quarters.

Children's Hospital

Research Director — Dr. S. Israels.

The research projects in pediatrics are supported by the Children's Hospital Research Foundation and grants from Playtex, Cyanimide Corporation, Mead-Johnson, Burrows and Welcome, etc.

Projects are in progress in most departments:

Cardiology — under Dr. G. Cumming.

Hematology — under Dr. A. Zipursky.

Genetics — Under Dr. I. Uchida.

Total irradiation and marrow transplants in animals — Doctors Zipursky, Neelands and Paris.

Absorption and excretion of sugars and lipids in newborns — Dr. Haworth and Mr. Ford.

Gamma globulin levels during infancy in prematures — Doctors Finkel, Haworth, Davies, and Miss Norris.

Lacrymal duct obstructions in newborns — Doctors Finkel and Reid.

Salicylate poisoning, using peritoneal dialysis and alkaline buffers in rabbits — Doctors S. Israels and Davies.

Nephrosis — clinical observations — Doctors Finkel and S. Israels.

Post Meningitis Syndrome — Doctors P. Hutchinson and M. Kovacs.

Deer Lodge Hospital

Director of Research — Dr. A. E. Thomson.

This hospital houses a clinical investigation unit containing 10 beds and the necessary equipment for

hemodialysis, and blood and gas analyses. The projects under study include:

In vivo hemodialysis.
Hypertension.
Pulmonary function.
Muscle blood flow.
Renal function.

The researchers involved are Doctors A. Thomson, M. Nickerson, W. Zingg, D. Snidal, J. MacDonnell and J. Dirks.

They also have a radio-isotope laboratory for tracer studies. These are all supported by grants from the Department of Veterans Affairs, National Research Council of Canada, and the Defence Research Board.

Independent of these units, in the hosptal laboratory, Doctors M. Crowson and P. Green conduct experiments. An animal house containing rats, rabbits and guinea pigs is used.

Winnipeg General Hospital

The General Hospital, in addition to some of the preceding, houses a respiratory physiology unit under the directorship of Dr. R. Cherniack.

Advanced work is being conducted with many special instruments for sampling and analyzing. Several research fellows are involved, including Doctors G. Young and M. Leurtzman.

St. Boniface General Hospital

St. Boniface Hospital is a research centre in many fields including endocrinology, respiratory physiology, newborns and prematures, heart - lung machines with cardio vascular surgery, and biochemistry.

The following are some of the projects:

"Increasing The Tissue Specificity of Serum Enzymes by Using Electrophoresis." This work is supported by the Muscular Dystrophy Association and the National Cancer Institute. — Dr. M. C. Blanchaer.

"Studying the Enzymatic Changes in Muscular Dystrophy at the Histochemical Level." This work is supported by the Muscular Dystrophy Association and the National Cancer Institute. — Dr. M. VanWighe.

"The Effect of Frost-bite on Epiphyses and Joint Cartilage." This work is supported by the Canadian Arthritis and Rheumatism Society. — Drs. D. R. Bigelow and M. Hamonic.

"Experimental Production of Pulmonary Hypertension: Its Generation and Reversal." "Metabolic Problems Concerned with Profound Hypothermia." — Dr. Morley Cohen.

"Further Studies on the Efficiency of Ileal Bladders." — Dr. A. C. Abbott et al.

"Studies on Arterial Distensibility in Patients With or Without Cardiovascular Disease." "Studies of Factors Governing Tissues Pressures in Edematous Patients." "Long Term Study of Vasomotor Responses in Diabetes." — Dr. Stefan A. Carter.

"Studies into Etiology and Pathophysiology of Hyaline Membrane Disease." — Drs. D. P. Snidal and Dr. A. J. DePape.

"Cancer Chemotherapy and Enzyme Changes." "Factors Effecting Clearance of I^{131} From Subcutaneous Tissue." "Blood Pressure Response to Arfonal(R) Infusion as a Guide to Blood Replacement." — Dr. J. P. Maclean.

Also clinical trials of various drugs are being carried out in the Out Patient Department and several inpatient services.

The departments of Physiology, Biochemistry, Anatomy and Pathology, also have many research projects, with which I am not familiar.

A few that have gained renown are:

K. Moore's studies of sex chromatin patterns in newborns.

F. Berthalanfy's studies on gastro-intestinal epithelial renewal.

K. Wallace's studies in quantitating metastases of malignant cells.

I am sure there is a great deal that I have missed because the information was not available to the methods of collection. Also, new projects have recently been started since these facts were compiled. The purpose was not that of completeness, but rather of sufficiency to impress the doctors of Manitoba with the fact that Winnipeg is, indeed, a Research Centre.

Serendipity

Paul Green, M.D., F.R.C.P.(C)

An ancient name for the Island of Ceylon is Serendip, and there is a Fairy Tale called "The Three Princes of Serendip" whose heroes "were always making discoveries by accident and sagacity, of things they were not in quest of." From this story Horace Walpole coined the word "Serendipity" in 1754, and used it to indicate discovery made by accident. Walter Cannon (Ways of an Investigator) brought the term into medicine.

Discovery by Serendipity: that is by unanticipated results occurring during the course of an investigation—will be anticipated in fields where knowledge is fragmentary, and especially where new techniques are applied to such a field. If all the facts are known obviously the results of any experiment will be anticipated, and only where unsuspected factors are involved will the unexpected result lay bare the unsuspected factors. It is not surprising that when experimental methods were introduced into medical fields that many, indeed most, discoveries were made "accidentally." The use of the term "accidental" should not have the contemptuous ring to it, implying little credit to the discoverer. As Pasteur has pointed out: "In the field of investigation, accident only favors those whose minds are prepared for it." Thus the Laws of Motion occur to a Newton, and not to a scullery maid, and the cyclical formula for benzene is dreamed about by a Kekulé, and not a Bishop.

A growing appreciation of the role that serendipity plays in discovery is apparent from the frequent use of this word in current literature. Indeed in January 1960 the "Second Bahamas Serendipity Conference" was held at Nassau, which really gives this word status.

In the field of the medical sciences very many major discoveries have been made serendipitously. The pattern of discovery often runs something like this: an unexpected finding is made—for example, the accidental contamination of a culture plate by a mold in Fleming's laboratory enabled him to conceive the idea of a fungus producing an antibacterial substance. There was no logical reason why this should have been deduced from existing knowledge. Fleming was a "Reaper," able to formulate a broad principle. Following this discovery (and often an inordinately long interval of time elapses) a mass of "gleaners" enter the field to do the obvious but exceedingly necessary labor of collecting thousands of species of molds to see what antibacterial action they may have, to develop production methods for producing the substances, for studying their chemistry, bacteriology, physiology, pharmacology and so forth. Each of these experiments in themselves, of course, can lead to further discovery by serendipity, (for example, the discovery and production of Vitamin B12).

1. Discovery Because of Technician Error

There are many examples of discovery that have come about because of an error in technique producing an unexpected result that leads the investigator to a new conclusion. The discoverer must be alert enough to appreciate the fact that an error has occurred, and to make full use of this accident. A romantic example of this type of discovery is the development of acid-fast staining by Paul Ehrlich. Tradition has it that Ehrlich was summoned from his laboratory in the middle of a staining experiment. As he left he instructed his wife to turn off the heat in his experiment after an interval of time. On his return he discovered to his anguish that his spouse had forgotten, and that the slides were a mess of dried stain. In an effort to salvage them he attempted to wash them off with acid alcohol and found that the heating process had produced staining in some structures that resisted decoloration with acid alcohol.

Another example is the discovery of the direct and indirect reaction for bilirubin by Van den Bergh. Ehrlich had developed the color reaction thirty years before, and employed alcohol in the color development. This was slavishly followed by subsequent workers, including Van den Bergh. One day his technician forgot to add the alcohol—fortunately it was a serum from an obstructive jaundice—and was surprised to find that color developed in spite of this omission. Following this lead, the direct and indirect reaction was uncovered, and the presence of two forms of bilirubin suspected. Clarification of the problem defied forty years of work, until in 1956 Billing, Cole and Lathe largely solved the problem.

Many other examples of this type of discovery are existent. The use of iodine in the treatment of hyperthyroidism is said to have arisen on a similar basis. A patient with hyperthyroidism and auricular fibrillation had tr. digitalis prescribed, and in error the chemist dispensed tr. iodine. Trousseau was so surprised by the excellent response that he checked the prescription and discovered the error.

The use of thyroid extract in the treatment of myxedema is another example. Gull (?) suggested to a patient with myxedema that he might try eating thymus, because it had been observed that patients dying with myxedema often had enlarged thymus glands. The butcher did not know his anatomy well, however, and gave thyroid instead of thymus, with dramatic effect for the patient. This lack of anatomical knowledge also worked in reverse, as one of Murray's patients with myxedema failed to respond because the butcher gave her thymus instead of thyroid tissue.

These stories are delightful, even if their veracity is questioned. However they are not examples of serendipity, as no investigation was being pursued at the time. They are examples of discovery by pure accident.

2. Discovery by False Reasoning

Many discoveries in past centuries have been based upon discarded theories: for example, the theory of signatures, where an herb might be used because its leaf was heart-shaped, in the treatment of heart disease. The use of iron may have come into use on this basis: treatment of "weakness" by a "strong" metal. Individuals with iron deficiency anemia had good responses to this therapy and gave reputation to its use in the treatment of anemia. Celsus had advocated the use of water in which sparks from a forge had been caught, because he noticed that animals living around a smithy had smaller spleens than the general run of animals.

The use of mercury in the treatment of "saturnine" diseases such as syphilis, (and incidentally probably leading to the accidental discovery of its diuretic properties), the discovery of Mesmerism by using a loadstone (and then one day having forgotten to bring the stone, using the motions alone), and many other examples can amplify this group. Perhaps a recent example of this is the use of TEM in the treatment of lymphomas: this substance had been used in the textile industry for years to bind fibers, and the idea that it might bind split chromosomes and prevent their separation led to its trial. It worked, but its mode of effectiveness apparently has nothing to do with the conception that led to its trial. However, once again they do not fit the pattern of discovery by serendipity.

3. Accidents of Time and Place

Many advances have been made because the right individual happens to be in the right place at the right time. The classical example of this is Archimedes. There are many examples in Medicine. Although Davy had suggested in 1799 that nitrous oxide might have some use in surgery, it was not until 1844 that the dentist Wells, while watching a popular demonstration of the effects of "laughing gas" realized that this might be a useful anesthetic agent.

Long before ether was used as an anesthetic, it was employed as a method for having a cheap jag—indeed during the days of prohibition it was used to adulterate beer, and in some areas is still used for an inexpensive drunk. One gay group was enjoying themselves in this manner with ether, when they seized a young negro lad passing by to enhance the fun by forcing him to inhale the liquid. In the ensuing struggle the lad became unconscious and in alarm, Dr. Long was sent for. When the victim promptly recovered with little evidence of ill effects, the anesthetic usefulness of this substance promptly suggested itself to Long. A discussion of the role of chance in the development of anesthesia is presented in the British Journal of Anesthesia, 24: 137: 1952.

More recently the discovery of the high electrolyte content of the sweat of fibrocystic disease was made because during a heat wave in New York it was noticed that an undue number of these sufferers were admitted in collapse (1948). This led Middelkamp to the discovery of the high salt content of their sweat.

Hofmann's discovery of the psychogenic effects of d-lysergic acid in 1943 were made on a similar basis. "I was forced to stop my laboratory work in the middle of the afternoon and to go home, as I was overcome by a peculiar restlessness associated with mild dizziness. Having reached home I lay down and sank into a kind of delirium which was not unpleasant and which was characterized by extreme activity of the imagination."

Many other examples can be cited — Galvani's discovery of electrical stimulation of muscle; the recognition of the penetrating powers of X-ray by Roentgen; Fleming's discovery of penicillin, and many others.

3. Discovery by Intuition

Intuition is a difficult thing to assess, because we are only supplied with examples in which intuition was successful. Undoubtedly there is a multiplicity of times when intuition has failed, and hence remains unheralded. Intuitive discovery has not played much of a role in Medical discovery; although possibly the suggestion as to the nature of the hemoglobin defect in sickle cell anemia by Pauling is such an example. In the physical sciences it may be more of a factor. The scientist, as objective as he may try to be, cannot but be "strongly influenced by social, economic and political circumstances; that the general style of contemporary thought in religion, philosophy and other spheres profoundly affects scientific thought" (Taton—Reason and Chance in Scientific Discovery). Teaching certainly profoundly affects the outlook of medical students, and how many generations of medical men were taught to see double liver cell layers in liver sections before the single cell situation was recognized; and how many saw hemolytic crises in hemolytic anemias with aplastic crises before this situation was pointed out. Perhaps, as Bohm suggests, it is a necessity to consider science in relationship to other disciplines. "The more creative physicists have in recent years cultivated philosophy. They are usually disinclined to admit to this weakness. But there is no escape, even it it be only to embrace antiphilosophic philosophies. For the physicist has come to realize that if he throws philosophy into the fire, his own subject goes along with it" (Causality and Chance in Modern Physics).

I would exclude intuitive discovery from the definition of serendipity.

4. Discovery by Serendipity

In order to qualify for a discovery under this definition, the following criteria should be fulfilled:

1) An investigation should be in progress.

2) An observation which could not be anticipated from previous knowledge must be made.

3) This observation must lead to the uncovering of a new and unexpected concept. Medicine is replete with examples of this type of discovery. A nicely illustrative one is that of von Mering and Minkowski. While investigating the role of various parts of the abdominal viscera in digestion, they were removing parts and observing the effects. In a dog whose pancreas had been extirpated it was noted that flies were attracted to his urine in unusual numbers, and on looking into this the unexpected discovery was made that the urine had much sugar in it. This led to the recognition of the role of the pancreas in carbohydrate metabolism and to the eventual discovery of insulin.

Richet was attempting to discover the minimum lethal dose of extracts of sea anemone tentacles. He observed to his astonishment that an animal who had previously survived a large dose of the extract died subsequently when given a small dose of the same extract. This led to the discovery of anaphylaxis. Pasteur's discovery of immunization may be held to be a similar type, although perhaps it fits into the first group of discoveries — by someone else's accident — for an old and forgotten culture was used to inoculate fowl, who sickened but recovered, and then were able to resist lethal virulent cultures of the same organisms.

The use of liver in the treatment of pernicious anemia may fit here. Whipple and Robsheit-Robbins studying the effect of various diets on the rate of regeneration of blood in dogs found that meat was the most effective. In those days liver was a cheap meat and hence was used in feeding animals. Minot and Murphy applying this research to the treatment of anemia, found that liver produced a response in pernicious anemia. Incidentally there is a story indicating that the use of liver in treatment of pernicious anemia might have been recognized sooner. In the outpatient department of a famous eastern medical school pernicious anemia patients were followed, and the staff were always somewhat mystified by a small group of patients who did unusually well as the years went by. These patients all came from the same outlying town and the folk lore in that locality was that liver was good for pernicious anemia. Each time they visited the clinic and amazement was expressed at how well they were doing, they said that it was because they ate liver. When the results of the investigations on liver in pernicious anemia was published, all the centres hastened to call in their pernicious patients to instruct them in the new therapy. Oh the joy of "I told you so!"

In 1942 Janbon et al were investigating a group of chemicals searching for a new antibiotic. As an unpleasant side effect they noted that some of these substances produced hypoglycemia. While they recognized the potential interest in this observation it was not until 1955 that a systematic investigation was made, leading to the development of the oral hypoglycemic agents for the diabetic.

The discovery of alloxan diabetes by Dunn arose because he was investigating the mechanism of the crush syndrome, and was injecting various muscle extract chemicals to study their effects. Alloxan produced diabetes.

Hahn's discovery of the clearing factor with heparin was an example of serendipity; as he was investigating hemolysis in dogs and noticed that the annoying interference produced by lipemia in the serum in his hemoglobin determinations did not occur if the dogs had been given heparin.

The investigation into allergens as a cause of coeliac disease led to the recognition of the role of gluten in this disease.

Barr's discovery of the sex chromatin with its far reaching reverberations was an example of serendipity. They were studying aircrew fatigue and were investigating the nuclei of cat hypoglossal nerves when it became apparent to them that female cats had different nuclei than male cats.

The role of Vitamin K, amino-oxidase inhibitors and the tranquilisers; of autoimmune bodies and many other recent discoveries come to mind as examples of serendipity. Indeed, it is difficult to list many major medical advances that were not examples of this type of discovery.

There is, perhaps, a moral to all this. The involvement of science and scientists in patterns of modern organization and teamwork may be a threat to the basis of discovery by serendipity. This is the Age of Organization and the individual is being submerged in it. He may not have time or encouragement to wonder about unexpected observations when the activity of his team is directed towards a specific goal. William H. Whyte, Jr. (The Organization Man) in his discussion on the bureaucratization of the scientist states "In no field, except the arts, does the elevation of the administrative values hold more dangers, yet in this respect science is not even fighting a holding action. To the contrary, the people in the Foundations and the Universities are re-enforcing these values, and by re-enforcing them further moulding the scientists to the organization image." Funds from Government and Societies tend to be granted to these teams for specific projects — usually applied rather than fundamental in nature. These funds are therefore directed to gleaning, and little to reaping, for in order to obtain funds a project usually must justify itself from previous knowledge and have a definite end in view.

Perhaps our knowledge of the medical sciences is advanced and complete enough now so that it will not suffer from this turn. But I doubt it.

Medicine

In Vivo Dialysis in Therapy

A. E. Thomson, M.D.*

In situations where the kidney is unable to maintain homeostasis either because of acute parenchymal damage or because of the presence of an ingested poison, measures which can substitute for renal excretory function are of obvious advantage in patient management. Both peritoneal[1,2] and extracorporeal dialysis[3,4] have been used for the amelioration of the clinical and biochemical manifestations of uremia. The successful use of such techniques is largely dependent on the proper choice of cases, the availability of an adequate laboratory and nursing service and the ability of the physician to cope with the complexities of medical renal disease in the critical period of renal failure. In addition, experienced consultants must be available to contend with the infectious, hematologic and other problems which regularly complicate the picture of an acute renal failure. This is particularly important in the traumatized patient, where the catabolic response is often severe and where the maintenance of an adequate and minimally infected airway so frequently determines the ultimate outcome. The present report deals with in vivo dialysis, using the disposable coil "kidney."

Indications

A. In acute renal failure:
   1. Clinical deterioration during oliguria.
   2. Biochemical abnormalities:
      a. B.U.N. in excess of 150-200 mg%.
      b. HCO_3 less than 15 mMl/L.
      c. K greater than 7 mEq/L.
   3. Correction of errors in clinical management, such as the development of pulmonary edema or over-digitalization.

B. In dialysable poisons:
   1. The known ingestion and probable retention of a potentially fatal dose of:
      a. Barbiturates — 3 gm. or more of short-acting preparations, or where blood levels exceed 4 mg%. 5 gm. or more of long-acting preparations, or where the blood levels exceed 8 mg%.
      b. Salicylates — 20 gm. or more, or where blood levels exceed 75 mg%.
   2. Progressive deepening of anesthesia — the occurrence of hyporeflexia or coma.
   3. The development of complications, such as acute renal failure, hyperpyrexia or pneumonia.

C. In chronic renal failure where the over-all function has previously been adequate, but is temporarily reduced by increased metabolic demands, for example infection or trauma. The correction of errors in clinical management, for example over-hydration (the dilution syndrome).

Although dialysis has previously been employed pre-eminently for the correction of biochemical abnormalities, there is increasing evidence to suggest that early and repeated dialysis in acute renal failure may allow patients with little effective renal function to remain ambulant and to ingest a near-normal diet during the variable period in which one waits for returning renal function[5].

Contra-Indications

Current dialysis procedures have not yet reached the stage of technical excellence where they can be regarded as an artificial organ, therefore this procedure has a limited role in the management of cases where the renal lesion is irreversible or rapidly progressive. Renal biopsy may be of some value in assessing the possible outcome in cases of acute renal failure. However, even extensive histological changes are sometimes compatible with an adequate functional recovery (Case 2). The presence of an hemorrhagic diathesis, not infrequently encountered in uremic acidosis, will make dialysis more difficult, but not necessarily technically impossible. The employment of fresh blood collected in silicone containers to preserve platelets and the use of regional heparinization, wherein only the blood in the dialysis apparatus is anticoagulated, make it feasible to handle most of these patients. The presence of pulmonary edema or cardiac irregularities may call for modifications in the procedure or in the composition of the wash fluid employed, but should not be considered contra-indications to the general procedure.

Apparatus

The twin-coil kidney most widely employed has an approximate area for dialysis of two square meters. Blood flow rates of the order of 200-400 ml/min. are feasible, and effective ultrafiltration can be achieved by varying the pressure within the coils over the range of 200-300 mm.Hg and by making appropriate adjustments to the total solute concentration gradient between the patient's blood and the bath fluid. Although few direct comparisons have been made, published reports[2] suggest that for a given urea nitrogen removal, a quarter of the time is required for hemodialysis when compared to peritoneal dialysis under ideal circumstances. The directional changes in extracellular parameters which can be achieved during dialysis are as follows:

1. A fall in the concentration of urea, potassium, inorganic phosphate and creatinine.

*Clinical Investigation Unit, Deer Lodge Hospital.
Department of Medicine, University of Manitoba.

2. A rise in blood pH and serum bicarbonate, calcium, hemoglobin, hematocrit, and, where required, in sodium. During a technically satisfactory six-hour period of dialysis it is possible to remove up to 70 gm. of urea and up to 100 mEq of potassium.

Where required, fluid removal at the rate of approximately 300 ml/hr. is feasible. An undesirable accompaniment of dialysis is a reduction in platelet count. In most cases this does not occasion any difficulties. However, replacement transfusion at the end of dialysis with fresh whole blood may sometimes be required.

Case Reports

In Table 1 a brief summary is shown of the cases in whom in vivo dialysis has been employed in this unit over the past year and a half. Dialysis periods of from one to six hours' duration were employed on 36 occasions in these 21 patients.

TABLE I

In Vivo Dialysis in Renal Failure and Poisoning

Case Sex Age	Etiology	Day of oliguria	Dialysis # of D.	Indic. for D.	Outcome
1 f 34	chronic nephritis toxemia pregnancy	14	1	pulmonary edema	Death in 1st hr. of D — pulmonary edema.
2 f 32	toxemia — renal cortical necrosis	5 11 15	3	acidosis urea	Renal biopsies showed renal cortical necrosis. Good functional recovery. Normotensive now.
3 m 55	chronic nephritis		2	urea Ca & P	Relief of hypocalcemic symptoms. Alive and ambulant 2 mos. after dialysis.
4 f 22	acute nephritis	15 17 38	3	urea acidosis	Anuric 38 days. Biopsy — severe nephritis. Cardiac arrest during 3rd dialysis.
5 f 36	hemolysis due to Cl. welchii	17 19	2	urea K	Ultimate diuresis and recovery.
6 m 70	hemolysis during T.U.R.	8 10 13	3	urea acidosis	Ultimate diuresis and recovery.
7 f 37	hemolysis due to Cl. welchii	11	1	K	Ultimate diuresis and recovery.
8 m 49	traumatic shock G.S.W.	8 10	2	K urea	Died day 12 — aspiration pneumonia.
9 m 51	traumatic shock cardiac tamponade	9	1	acidosis	Died day 9 — ventricular fibrillation. P.M. hemorrhagic areas in myocardium, old.
10 m 77	hemolysis during T.U.R.	10 12	2	acidosis urea	Died day 12 — bronchopneumonia, Carcinoma prostate.
11 m 12*	salicylate poisoning	1	1	coma Bl. salicylate 105 mg%	Recovered consciousness shortly following dialysis.
12 m 47	traumatic shock	6 13	2	K	Died day 15. P.M. — multiple fractures, healed lacerations of kidney, liver, minor subarachnoid and cerebellar hemorrhages.
13 m 51	chronic nephritis		2	urea acidosis	Died 1 week post dialysis — Bronchopneumonia.
14 f 42	post-partum hemorrhage	13	1	K urea	Died day 21 — cerebral infarction. Adequate diuresis followed dialysis.
15 m 55*	methyl salicylate poisoning	1	1	Bl. salicylate 100 mg%	Recovery. Complication — ischaemic contracture left forearm.
16 f 55	calculus obstr. single kidney	8	1	urea	Died day 34. P.M. — extensive pyelonephritis destruction of remaining half of horseshoe kidney.
17 m 21	traumatic shock ruptured kidney	10	1	urea acidosis	Died day 14 — uremic hemorrhagic diathesis.
18 m 14 mos.	post-op shock? nephrectomy		1	urea acidosis	Died day 50 — overhydration and convulsions.
19 f 2	dehydration sulphas?	5	1	urea acidosis	Died day 10 during diuretic phase. Cerebral and renal infarction.
20 m 28	traumatic shock ruptured gut	6 8 10 13	4	urea acidosis	Died day 49 during diuretic phase. P.M. peritonitis. No return of G.I. function alhough anatomically intact.
21 f 22	post-partum hemorrhage	7	1	urea acidosis	Diuresis and recovery.

NUMBER OF CASES — 21 RECOVERY — 7

*Cases not showing oliguria.

The extent of restoration towards normal of uremic acidosis and of clinical improvement were found to vary with the efficiency of the dialysis procedure and with the extent of the individual catabolic response. Examples of extremes in response were shown by cases 14 and 20. Case 14 was a 42 year old female in whom acute renal failure followed a postpartum hemorrhage. On the 13th day of oliguria (an output of less than 200 ml/day) serum potassium was 7.7 mEq/L, bicarbonate 17 mEq/L and blood urea nitrogen 150 mg%. Following a five-hour period of dialysis, in the course of which 48 grams of urea were removed, these same parameters changed to 4.5, 23 and 53 respectively. The patient, who had been comatose following several convulsive episodes before dialysis, regained consciousness and was sitting out of bed the following day. Although oliguria persisted for three further days, blood urea nitrogen remained below 100 mg%. In contrast, Case 20, a 28 year old male in whom acute renal failure followed traumatic shock due to avulsion of an upper extremity and a ruptured gastro-intestinal tract, showed gross distortion in serum chemistry much earlier. By the 4th day his potassium was 7.8 mEq/L, bicarbonate 14 mEq/L and blood urea nitrogen 175 mg%. After four hours of dialysis, during which 43 grams of urea were removed, the values had changed to 5.3, 16 and 143 respectively. Clinical improvement was minimal and three further periods of dialysis were required to stabilize his biochemical picture. It was not until the onset of spontaneous diuresis and the occurrence of urine flows in excess of 2 liters/day that the level of blood urea nitrogen dropped below 120 mg%.

Hyperkalemia was found to be readily correctable during dialysis. However, with the advent of potent carboxylic cation exchange resins* it was seldom necessary to employ dialysis for this purpose only, except in the extremely traumatized individual where the catabolic response was severe. Given by enema, in 20 - 40 grams daily, these exchange resins are usually effective in maintaining serum potassium values in the neighborhood of 5-6 mEq/L.

Dialysis for the removal of salicylates in potentially fatal dosage was undertaken on two occasions. In both instances (Cases 11 and 15) marked clinical improvement occurred during or shortly following the dialysis procedure and in one of these 4 gm. of salicylate radicle were removed during five hours of dialysis.

The longest duration of oliguria prior to diuresis was shown in Case 5, where diuresis occurred on the 23rd day following two periods of dialysis on the 17th and 19th days. The longest duration of oliguria without recovery was shown by Case 4, a 22 year old woman with an acute nephritis who remained virtually anuric for 38 days and who was dialysed on three occasions—on the 15th, 17th and 38th day of her illness. As may be seen in the time plot shown in Fig. 1, this woman's hematologic and

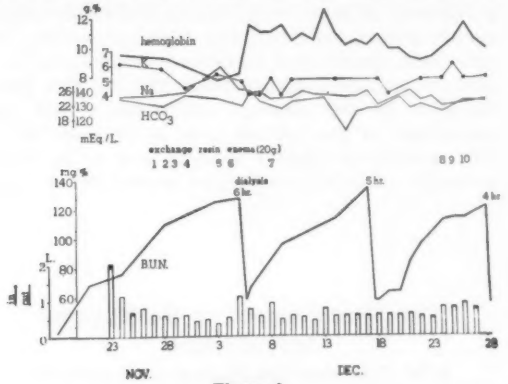

Figure 1

Case 4 — Acute glomerulonephritis. Time plot of hematological and biochemical changes during continued oliguria. Fluid intake is plotted from zero line upwards and output, in black, downwards from the intake.

biochemical picture was maintained within limits compatible with survival by a combination of a restricted fluid regime of high carbohydrate content, exchange resin enemas and repeated dialysis. During the 38 days of oliguria the patient remained afebrile and semi-ambulant. Cardiac arrest occurred during the final dialysis period. This happened coincidentally with a change in wash fluid of the dialysis apparatus which, in retrospect, was probably accompanied by a too-rapid elevation in pH and in calcium content. At autopsy all glomeruli were found to be extensively involved in a nephritic process. No other significant pathology was found. The only other case dying during a dialysis procedure was Case 1, who had been oliguric for 14 days and had clinical and laboratory evidence of cardiac arrhythmia and pulmonary edema. Death from pulmonary edema occurred within an hour of beginning dialysis and it is unlikely that any effective fluid removal had been achieved in this short a period.

The over-all survival rate of 35% for this group is somewhat less than the survival figures for our total experience of some 90 cases of acute renal failure (45%). This most likely reflects the limitation of dialysis to patients in whom clinical grounds suggest that conservative management alone will be insufficient to ensure their survival. In five cases (Cases 4, 13, 16, 18 and 19) autopsy revealed potentially irreversible renal lesions.

Serial determinations of renal clearances performed in many of these patients indicated that dialysis did not measurably improve renal function, nor was there any evidence to suggest that diuresis occurred earlier in those so treated. However, there was no doubt that many of these patients survived for longer periods than comparable cases managed conservatively.

*Carboxylic acid type resin (sodium salt) CTS-3 Eli Lilly and Company.

Summary

A brief report of our experience with 21 subjects in whom in vivo dialysis was employed for the persistence of acute renal failure and for the dialysable poison salicylate has been presented. In situations where renal function is temporarily unable to maintain homeostasis, dialysis has been found to be one measure among many that can contribute to the optimal care of the individual. The decision to employ dialysis, and as well the probable effectiveness of this procedure in such circumstances, must be approached in conjunction with the over-all management of the patient.

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The Management of Barbiturate Intoxication

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In recent years the number of patients who have been brought to the hospital in a comatose state as a result of severe barbiturate or tranquillizer poisoning, has increased alarmingly. The average number of cases admitted to the Winnipeg General Hospital per year rose from 30 in 1952-56 to 76 in 1959. During the last nine months the admission rate has increased even further. The reason for this marked increase is not readily apparent, although one cannot help but feel that the medical profession must be prescribing these drugs more freely. Because of the marked increase in the number of cases being seen, and because both barbiturates and tranquillizers act to depress the respiratory center and produce a potentially fatal condition, it seems advisable to review the management of severe barbiturate intoxication.

The diagnosis of barbiturate poisoning in a comatose patient may be difficult to establish unless there is a history of drug ingestion. Rapid confirmation of the diagnosis may be obtained from the urine by tests that show the presence or absence of barbiturates, opiate, or tranquillizing drugs in the urine. Unfortunately, a negative test does not definitively rule out barbiturate intoxication. In addition, at least at the Winnipeg General Hospital, the test for tranquillizers is only positive for the phenathiazines. A definitive diagnosis of barbiturate intoxacation can be established by analysis of the serum barbiturate level. However, while blood should be drawn for the barbiturate level in all cases, it must be pointed out that the results of this test do not usually become available in less than 24 hours. The level, therefore, should not be relied on as a guide to therapy, for this condition is an emergency which requires immediate action.

Over-dosage with barbiturates or tranquillizers produces marked respiratory depression, and a fall in the alveolar ventilation with resultant hypoxia and hypercapnia. These alterations of the blood gases further depress cerebral function and aggravate the coma, which may even progress to a fatal termination. Even in the mildest form of case, stasis of secretions and atelectasis are prone to occur. In addition, even though a patient is admitted awake, he is often deeply comatose several hours later, because of continued absorption of the drug. Careful observation is therefore imperative.

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Therapy

As in all the conditions in which acute respiratory failure has developed, the management of barbiturate intoxication is concerned with the provision of an adequate ventilation, and the increased elimination of the offending drug.

Provision of an Adequate Ventilation

Paramount in the management of this condition is the provision of an adequate alveolar ventilation.

1) The Airway: In order to provide an adequate alveolar ventilation it is essential that the airway be patent. This is usually accomplished by the instillation of an endotracheal tube, and aspiration of tracheo-bronchial secretions. The endotracheal tube may be left in the trachea for about 36 hours. Following this, if the patient is still unconscious, or if secretions are a problem, a tracheotomy is necessary. Both the endotracheal tube and the tracheotomy tube should have a rubber cuff which can be inflated, so that controlled respiration can be instituted, if necessary.

Whenever the normal humidifying property of the nasal mucosa is removed, as is done when an endotracheal tube is inserted, or a tracheostomy is performed, it is essential to provide adequate humidity to the respiratory tract. This can usually be accomplished by nebulization of oxygen or compressed air through saline, or a detergent, into a perforated plastic bottle, placed securely over the tracheostomy. To remove secretions, suction should be carried out with a catheter on a Y-tube for no longer than 10-15 seconds at a time. The catheter should be left in an antiseptic and rinsed in sterile saline before each use. A separate catheter should be used for the nose and mouth. The foot of the bed should be elevated about 12 inches, and the patient turned from side to side every half hour,

to facilitate drainage of endobronchial secretions to that part of the trachea which is accessible to the suction catheter. Bronchoscopy may be necessary on the third or fourth day after tracheotomy, in order to remove crusts or inspissated secretions.

2) Alveolar Ventilation.

Assessment of Alveolar Ventilation

It must be stressed that it is virtually impossible to assess the adequacy of the alveolar ventilation by means of a physical examination alone. The adequacy of the alveolar ventilation can only be assessed by determination of the arterial carbon dioxide tension, a fall in alveolar ventilation resulting in a rise in the arterial carbon dioxide tension. The finding of an elevated arterial carbon dioxide tension in this condition, therefore, indicates that the alveolar ventilation is inadequate, a situation which requires urgent treatment and correction.

The arterial carbon dioxide tension can be determined directly by the direct bubble technique, or the carbon dioxide electrode, or indirectly, from the Henderson-Hasselbach equation by measuring the arterial pH and total carbon dioxide content. If the lungs are healthy, the alveolar carbon dioxide tension may be used as an index of the arterial carbon dioxide tension. This is achieved by estimating the carbon dioxide content of an end-tidal sample of expired air. However, the use of an alveolar sample is not applicable in pulmonary disease, because there is a marked disparity between the arterial and the end-tidal carbon dioxide tensions, when the lungs are diseased. On the other hand, the arterial carbon dioxide tension can be quickly estimated in both normal subjects and in individuals suffering from pulmonary disease by a rebreathing technique. A mixture of carbon dioxide and oxygen is rebreathed from a bag until the carbon dioxide in the bag comes into equilibrium with the mixed venous blood. The equilibrium is recognized by the "plateau" which develops when the carbon dioxide concentration at the mouth is recorded with a rapid carbon dioxide analyzer. The mixed venous carbon dioxide tension can also be measured without a rapid gas analyzer, by having the subject rebreathe about a liter of pure oxygen for 1½ to 2 minutes. The "rebreathed" mixture is later again rebreathed for 15 to 20 seconds, and then analyzed for carbon dioxide. Only 20 seconds are allowed because it would take about this time for blood, which has been unable to give off carbon dioxide to the alveoli to reach the tissues and return again with its carbon dioxide tension still further elevated.

Figure 1 shows the relationship between the indirect or rebreathing carbon dioxide tension as determined by this technique and the arterial carbon dioxide tension. It can be seen that there is an excellent correlation between the two measurements at both high and low levels of arterial pCO_2. Utilizing this technique, therefore, it is relatively

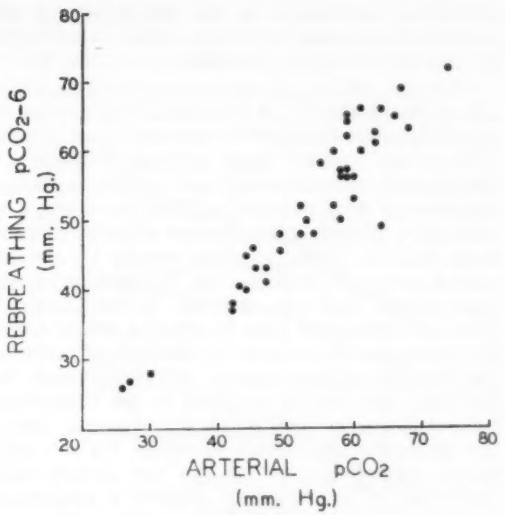

Figure 1

The relationship between the "rebreathing" CO_2 tension and arterial CO_2 tension when the former has been corrected by subtraction of 6 mm.Hg.

easy to assess the adequacy of alveolar ventilation in patients with respiratory disease. In this way, respiratory failure, with carbon dioxide retention, can be recognized early, and proper treatment instituted.

Assisted Respiration

If the rebreathing pCO_2 is found to be greater than 45, some form of assisted respiration must be instituted immediately. If a respirator is not immediately available mouth-to-mouth resuscitation may be necessary. If possible, some form of positive pressure breathing should be established to either assist or control respirations through the endotracheal tube. The simplest form of positive pressure breathing is achieved by compressing an anesthesia bag containing oxygen. If the patient-operated positive pressure breathing apparatus is available, these may be used. On the other hand, if the patient is apneic, some form of automatic apparatus, such as the Bird Respirator or the Emerson respirator, is necessary to restore the alveolar ventilation to normal levels. As will be pointed out later, it is actually beneficial to hyperventilate the patient.

Eliminating of the Offending Agent

Once an adequate alveolar ventilation and a patent airway have been established, steps should be taken to remove as much as possible of the offending depressant drug.

1) Gastric Suction

With the endotracheal tube cuffed, so that aspiration of gastro-intestinal contents is impossible, a gastric tube should be inserted and the gastric contents aspirated. This is important because an

aspiration pneumonia is not uncommon if the stomach is aspirated before the airway is intubated.

2) Increased Urinary Excretion

The main aim in promoting excretion of barbiturates is the induction of a diuresis. This obviously necessitates an adequate circulating blood volume and urinary output. Most of these patients are dehydrated on admission and require sufficient intravenous fluid therapy, or blood or dextran, to promote a diuresis. A minimum of three liters of fluid, half of which is saline, should be administered over a 24 hour period. In addition, it has been shown that the excretion of barbiturate is enhanced when the urine is alkaline, under which circumstances the volume of excretion of barbiturate through the renal tubules will be increased. An alkalotic state can be achieved by the administration of lactate or bicarbonate intravenously, thereby producing a metabolic alkalosis. On the other hand, since respirator therapy has already been instituted, it is simple to produce a respiratory alkalosis by inducing hyperventilation. The combination of hyperventilation and the administration of bicarbonate might even further enhance the excretion of barbiturate, but it may not be advisable to produce too severe an alkalosis.

An example of the relationship between the alkalinity of the blood and the excretion of barbiturate is illustrated in Figure 2. This 30 year

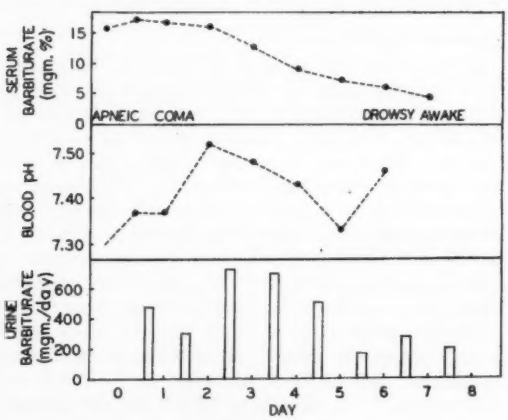

Figure 2

The serum barbiturate level, daily arterial pH and urinary excretion of barbiturate. When alkalosis was induced there was an increased excretion of barbiturate and a resultant fall in serum level.

old female was admitted to the Winnipeg General Hospital, after having ingested more than 50 grains of phenobarbital. On admission, the serum barbiturate level was exceedingly high and respirations were markedly depressed. On arrival in casualty she became apneic. She was immediately resuscitated, an endotracheal tube inserted, and controlled respiration instituted. A tracheotomy was then performed. Despite the provision of an adequate alveolar ventilation, she was comatose for six and one-half days. During this time there was a definite relationship between the pH of the arterial blood and the amount of barbiturate which was excreted in the urine. As the pH fell the barbiturate excretion diminished. On the other hand, when ventilation was increased, so that the arterial pCO_2 fell, producing a respiratory alkalosis, more barbiturate was eliminated. The serum bariturate level fell at a rate which was proportional to the urinary excretion of the drug, and when the level fell to a low level, it was possible to rouse her. Several days later the tracheotomy was closed, and the patient made an uneventful recovery.

3) Dialysis

Dialysis has been used successfully in the management of barbiturate intoxication and has resulted in reduction of blood levels of barbiturate. There no doubt is a place for this form of therapy, in that it may hasten the recovery of these patients. It was definitely considered for the patient which is reported. On the other hand, it has been our experience that as long as the alveolar ventilation is maintained, and a diuresis induced, the procedure is unnecessary. This, in addition to the fact that it is an arduous procedure, suggests that, provided the elimination of barbiturate in the urine can be increased by other means, artificial dialysis is not necessary.

Respiratory Stimulants

In our experience the administration of respiratory stimulants to the patient who is heavily narcotized is of little value. In addition, despite the fact that some drugs are touted as being barbiturate antagonists, none are in fact capable of doing this. When the patient is improving, however, and is in the mildly responsive state, the administration of caffeine, or amphetamine, may lessen the drowsiness of the patient so that the nursing is more easily performed. On the other hand, our practice is to administer amnophylline intravenously to patients with barbiturate poisoning, because it has a diuretic and a bronchodilatory effect, both of which may facilitate the improvement of the patient. Nevertheless, at any time, the use of respiratory stimulants is merely an adjunct to the therapy of barbiturate intoxication, and should only be used along with the prime therapeutic aims of provision of an adequate alveolar ventilation and an increased elimination of the offending drug.

Obstetrics & Gynecology

A Preliminary Report on a Method of Foetal Electrocardiography

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Although in 1893 Von Winckel[1] showed that foetal bradycardia was a sign of distress with a poor prognosis, and Cremer[2] in 1906, took the first foetal electrocardiogram, the advancements since then have been mostly in confirming foetal life[3-6]. Many types of electrocardiographic and electroencephalographic machines have been used. They have been coupled to various preamplifiers and all kinds of rectal, abdominal and vaginal leads. All those machines have been proved unsatisfactory in some way, and the difficulties fall into two main factors.

Group A. Foetal Factors

1. The minute electrical potential of the foetal heart which is between 7 - 70 microvolts (Blenheim[7]) is easily overpowered by the potential of the maternal heart which is approximately 2000-3000 microvolts.

2. The varying thickness of the foetal heart muscle and its position in the foetal thoracic cavity.

3. The varying positions of the foetal heart.

Group B. Extracardiac Factors

1. Nervous patients with somatic muscle tremor.

2. The insulating effects of amniotic fluid, vernix and thickness of maternal tissues.

3. Outside interference from other electrical sources.

4. Inadequacies of the recording machines.

5. The positions of the recording leads.

Recently Southern[8] has overcome some of these difficulties and has related the components of the foetal complex to various factors, while Hon[9] is working on the effects of environmental factors on the foetal heart rate.

When the slow drop of the infant mortality rate for the first day of life is compared to the fall in the neonatal rate over the last fifty years (Wegmen[70], see figure 1) and the fact that the anoxic neonatal loss is 1.4 per 1000 live births while the late intra-uterine anoxic loss is 8 per 1000 live births (Gibberd[11]), it becomes obvious that late intra-uterine distress and anoxia is one of the keys to the lowering of foetal wastage. Not only is

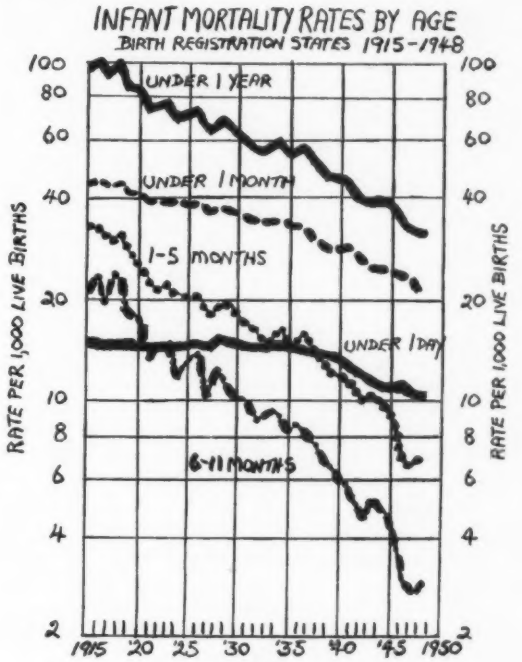

Figure 1
Trend in Infant Mortality
(Wegman, Ped. 6: 673, 1950)

the foetal mortality affected, but foetal morbidity, especially in brain damage (Penfield & Jasper[12]), could be changed, if the so-called difficult labour could be avoided. To try and solve these problems, a research group at the Womens' Pavilion became interested in foetal electrocardiography. This group was formed from the Department of Obstetrics, Pediatrics, Electroencephalography, Medical Electronics and Anaesthesia. All members of the Department of Obstetrics agreed to co-operate and allow their cases to be used.

The specific aim of the project was, first of all, to develop an inexpensive, simple and easily operated foetal electrocardiogram and then to use this machine to try and lower the late intra-uterine anoxic loss by observing the foetal heart complexes in time and duration and comparing the normal with the abnormal.

Equipment and Technique

1. Recording Unit

A Gilson Medical Electronic Cardio-Encephalograph was used at the beginning of the series. This is a two channel direct writer which is portable, can record in two different positions and is fairly simple to operate. The EKG channel was used for

the maternal trace Lead 1, while the EEG channel recorded the combined foetal and maternal impulses. By comparing the two tracings of the different channels the maternal complex could always be seen and so enabled the smaller foetal complex to be identified. The paper speed was 25 mm. per second. However, as this machine is made to amplify low frequencies from 0.25 cycles per second up to 30 cycles per second, and the components of the foetal impulse may be as high as 100 cycles per second, all parts of the foetal complex could not be registered. A high gain low noise transisterized pre-amplifier was added later in the series in order to increase the rejection ratio for common mode signals and so reduce the 60 cycle interference pick up from the power lines.

The pre-amplifier also helped to boost the high frequency response of the Gilson machine. This pre-amplifier was made and developed by Mr. Raber, the electronic expert. No exact calibration was done because the P and T waves were never large enough in amplitude to be measured. The result was that the foetal QRS was registered as a low amplitude spike.

2. Electrodes

Only abdominal leads were taken. The electrodes were standard children's suction cup electrodes. They were easily applied to the patient, stayed on with a minimum of trouble, though, if too much suction was applied, cupping marks were noticed. The electrodes were so placed that the foetus in a vertex presentation gave a QRS in the opposite direction to the maternal QRS. A breech, of course, gave both QRS pointed in the same way.

3. Electrode Paste

Cambridge Electrode Jelly was used after the skin had been lightly sand-papered to give a better contact.

4. Recording Paper

Two inch wide EKG paper folded into 11¾ inch lengths was used.

5. Technique

The mother was shown and reassured about the machine. All the mothers were glad to co-operate, some because of interest and others because of boredom.

The promise of a piece of the tracing for their baby book worked wonders with the frightened primipara, while suspicious husbands could always be soothed by being allowed to examine and work the recorder. No sedation was used unless the obstetrician had already ordered his routine analgesic. The mother was questioned regarding her comfort, to empty her bladder, then told to lie back and relax. Electrodes were placed on the mother's arms for Lead 1, a ground was applied to her thigh, and the two foetal leads were applied to her abdomen. One electrode was placed in the mid line just above the symphysis pubis and the other on the upper limit of the fundus of the uterus. After this tracing, the electrodes were wandered around the mother's abdomen like the opposite points of a compass till the best tracing was obtained. The nurse in charge then checked the foetal heart rate by stethoscope and this was noted for comparison.

In taking the tracings, a tracing was said to be positive when at least five consecutive foetal complexes could be clearly seen. As the stronger potentials of the maternal impulses often blocked or distorted a few foetal complexes, the series of complexes had to be measured in millimeters with calipers.

If the tracing showed only a few single complexes or no distinct foetal complexes then the tracing was said to be negative. This standard may seem a little harsh, but the opinion of the research group was that all tracings should be negative or positive. Alternating current, muscles tremor in nervous patients, patients in the seventh to eighth month, and patients beginning labour, sometimes made it difficult to analyse the tracings. A second recording, after more reassurance had been given to the mother, or even after a lapse of time, often made a previous negative report now become positive. The whole procedure took about twenty minutes.

Series of Cases

1. The first series was taken with the Gilson Cardio-Encephalograph. The period of time was from April 1959 to March 1960 and consisted of 500 tracings.

2. The second series was from March 1960 to August 1960 and consisted of 157 tracings. In this series the high gain pre-amplifier was added to the Gilson machine. This series has not yet been completed.

3. A small third series is being carried out at the present time. This series is using a Foetal Heart Monitor which was described by Simpson[13]. This monitor acts like a sensitive microphone and is strapped to the mother's abdomen. The low input frequency of the foetal heart is passed to a loudspeaker and produces clearly audible notes which correspond to the foetal heart rate in time and duration. This series is being evaluated against the EKG series and is not yet completed.

Illustrations of Tracings

When reading the tracing it must be remembered that the top channel tracing is maternal only and the bottom is maternal and foetal combined. The maternal in the top track corresponds to the maternal wave in the bottom and so the foetal can be identified.

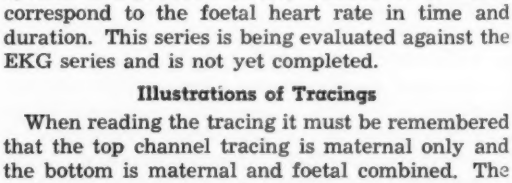

Figure 2

The maternal heart rate is varying from 88-94/min. A foetal EKG of good amplitude is visible, and a frequency of 167/min.

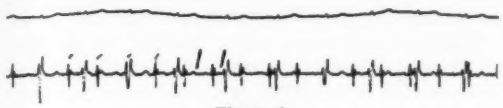

Figure 3
The maternal heart rate is 85/min.
The foetal EKG shows a well-marked QRS complex with a good suggestion of a P and T wave.
The foetal EKG frequency is 125-130/min.

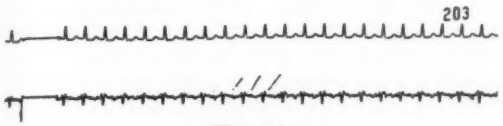

Figure 4
The maternal heart rate is 187-200/min.
The foetal EKG shows a very rapid rate, 167-217 varying, and showing extra systoles.

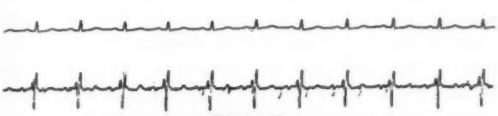

Figure 5
The maternal heart rate is 88/min.
The foetal EKG shows a rate of 150 and suggests that the babe is Breech position.

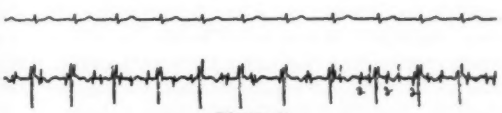

Figure 6
The maternal heart rate is 88/min.
Two foetal EKG's are visible, with good amplitude,
"A" baby — Vertex — at 136/min,
"B" baby — Breech — at 150/min.

Series 1 — April, 1959 to March, 1960

Gilson Machine

Total number of tracings was 500
Number of repeat tracings 22
Number of cases for the series 478

Result 1 — Total Number of Births, 478

Foetal Heart Rate By Stethoscope	Foetal EKG By Machine	No. of Births	Live	Still-born	Neo-natal
Present	Present	424	424	—	—
Not Present	Present	10	9	1	—
Present	Not Present	35	30	2	3
Not Present	Not Present	9	9	—	—

In 97.6% of cases there was a foetal heart heard by the nurse with a stethoscope, while an EKG was present in only 92.8% of cases. In the latter part of the series, as the technicians became more experienced with the machine, the percentage correct for the machine rose to 94%.

Of these 35 cases where a FHR was present but the machine registered no EKG:

12 were due to faulty technique.

11 were in the seventh to eighth month of pregnancy

3 an EKG was probably present, but did not meet our requirements for a positive tracing.

1 the mother was markedly obese.

3 were due to the babe's position.

2 were due to probably low foetal amplitude.

3 were due to cause unknown — probably technician's error.

so in 15 cases the technique or technician were at fault and this lowered our percentage.

It must be noted that our percentage increased as the machine was modified and the technician became more familiar with the technique.

Result 2 — Patients at Thirty to Thirty-six Weeks

Number of Cases — 19

Foetal Heart Rate By Stethoscope	Foetal EKG By Machine	No. of Births	Live	Still-born	Neo-natal
Present	Present	12	12	—	—
Present	Not Present	6	6	—	—
Not Present	Present	1	1	—	—

Here the foetal stethoscope is 94.7% correct, while the EKG is only 68% correct. However, both Wimmer[16], and Bernstein[17]; admit that the period of time from the seventh to the eighth month is the most difficult time to get a foetal heart tracing. Wimmer ascribes this to the extremely low conductivity of the vernix caseosa. In the article by Bergman and Hall[11], their percentage of positive tracings for the seventh and eighth month was 50% and 43% respectively.

Result 3 — Multiple Births — 12 Sets of Twins

Foetal Heart Rate By Stethoscope	Foetal EKG By Machine	No. of Births	Live	Still-born	Neo-natal
2 Present	2 Present	5	10	—	—
1 Present	2 Present	3	6	—	—
2 Present	1 Present	4	6	2	—

In 79.1% of foetal hearts heard in the multiple births the nurse was correct by stethoscope, while the EKG machine was correct in 91.6%. In all of these cases where the machine was correct with two EKG's, it was the first knowledge that the obstetrician had that there were twins.

Result 4 — Deaths — Total 25

Stillbirths — 12

9 showed no EKG and no FHR.
3 showed distress by irregularity in rate both by stethoscope and EKG.

Neonatal — 13

3 had a FHR and a negative EKG and died within 12 hrs.
5 had distress by FHR and EKG and died within 12 hrs.
5 had no distress by FHR yet had an abnormal EKG at the time of tracing.

Result 5 — Miscellaneous

1. The foetal heart rate by stethoscope differed from the EKG rate by a spread of plus or minus ten on an average. The largest difference was 60 with a FHR of 140 and an EKG rate of 200.

2. The earliest gestation that an EKG rate was monitored was eighteen weeks.

3. There appeared to be no relationship between the Apgar rating and the EKG rate. It must be noted that the EKG tracing was usually taken during the first stage of labour, while a high proportion of foetal distress occurs during the second stage. The difficulty in taking a tracing during the second stage is due to the strong contractions affecting the tracing and the drapes and instruments interfering with the electrodes.

4. One case with no foetal EKG present and still negative on repeat tracings was referred back to the obstetrician and proved to be a mole.

5. Another case with a uterine abnormality which was being slated for surgery had an EKG tracing taken as a precaution. A positive tracing was obtained. The patient was later delivered of a full-term live infant.

6. Two diabetic mothers with bad obstetric histories had repeated tracings taken over a period of fourteen weeks. Each time the obstetrician was reassured of the viability of the foetus and that the amplitude of the QRS wave was increasing in size, suggesting that the foetus was growing satisfactorily. Later delivery gave two live infants, though one died later in the neonatal period.

Series 2 — March, 1960 to August, 1960

Gilson Machine With Added Preamplifier
(This preamplifier was designed and manufactured by Mr. M. Raber)

Result 1 — Total Number of Births, 157

Foetal Heart Rate By Stethoscope	Foetal EKG By Machine	No. of Births	Live	Still-born	Neo-natal
Present	Present	144	136	1*	7
Not Present	Present	5	3	1*	1
Present	Not Present	5	3	—	2
Not Present	Not Present	3	1	2	—

In the two stillborns marked * both showed distress on the EKG tracing but not by the FHR with a stethoscope.

In the five cases with no EKG but with a FHR, two were breeches, two were at 36 weeks, and one had a marked muscle tremor; so all five were difficult to take with the EKG machine.

The percentage correct for both the foetal stethoscope and the EKG machine was 96.2%.

It appears that the pre-amplifier had increased the sensitivity of the EKG machine by a gain of 3.4% when the percentage correct of Results 1 and 2 are compared in the Series 1 and 2.

Series 3 — August, 1960 to September, 1960
Foetal Pulse Rate Monitor
Result 1 — Total Number of Cases, 30

The foetal monitor was tried in thirty cases and checked against the foetal heart rate taken with a stethoscope. While the audible "beep" of the monitor came through clearly a contraction seemed to cause it to miss beats when compared to the rate by stethoscope. The pick-up of the monitor is very sensitive, and moving the bedclothes or sterile drapes of a patient caused a lot of interference and so drowned out the foetal sound.

We are now trying to insulate the pick-up of the monitor from outside interference, and, if this is possible, the machine may have possibilities, especially as the monitor can be used with sound, flashing light, or ear phones.

Its real place may be in the teaching of the nurses and students in listening to foetal heart sounds.

Discussion

If the late intra-uterine anoxic distress and loss is one of the keys to the lowering of foetal wastage, the question is whether this loss is an avoidable and preventable loss. Thus our knowledge of this period of gestation must be increased, and, though very little is known, any positive or negative findings will be of use now and to future obstetricians.

At first glance foetal electrocardiography seems to be a simple and easy task and should produce positive results. The great drawback is the lack of a suitable inexpensive recording machine. The foetal R wave is approximately 25 microvolts in amplitude and so the P and T waves should be about 5 microvolts if they are in proportion to the waves in the adult heart. Skin noise has a potential of 3 - 5 microvolts, and, as all machines have an average potential of 1 - 2 microvolts, the total will easily mask the P and T waves (Hon[17]). The only way to see whether the machine offers any advantage over the FHR by stethoscope is to analyze certain features which are common in both results.

1. Rate and Rhythm

The rate and rhythm by the EKG machine is always more accurate than the FHR by stethoscope and the human ear, (see No. 1 Result 5). This is very important in fast rates which are difficult to count accurately when using the foetal stethoscope, and in irregular rates—to try and distinguish the rhythm. The EKG tracing can show extra systoles and other changes which cannot be identified by the human ear. The mother's contraction can also be noted clinically simultaneously with the EKG rate and so the slowing of the foetal heart rate can be differentiated into physiological and pathological bradycardia (Hon[9]).

In many cases the obstetrician has been reassured regarding a regular irregularity which was impossible to diagnose with a stethoscope. The supreme machine would be one which checked the rate and rhythm only, and was pre-set to take tracings when the rate and rhythm changed from the normal. This machine is possible and could be made with the new electronic equipment which has been invented.

2. Position

The EKG machine can show in a high percentage of cases the position of the foetus, as a vertex presentation will give a QRS wave which is discordant to the mother's QRS wave. Recently Hon[17] has pointed out that if the foetus revolves on its long axis and so changes its spatial relations to the electrodes then the QRS wave may change its direction.

3. Viability

While a positive tracing is an absolute sign of life, a negative tracing is never definite by itself and must be correlated with other clinical signs. Quite a few negative tracings, if repeated, will now give a positive result. Our percentage of negatives became lower as we became more experienced with

the EKG machine and when the pre-amplifier was added our negative rate became even lower and equal to the negative result with the foetal stethoscope. One of the advantages of the EKG machine is that it can frequently give a positive result before anything could even be proved by X-ray and can be repeated as often as necessary with no danger of X-Ray irradiation.

4. Multiple Births

The EKG machine appears to be vastly superior to the stethoscope in diagnosing multiple births, (see Result 3, Series 1). Larks[18] has a tracing of four hearts from a quadruple birth. Only a machine can register heart rate clearly in multiple births especially when the birth involves more than two infants.

5. Maturity

We were unable to measure the amplitudes of the QRS complex but Wimmer[14] states that the amplitude increases as the gestation, and Bergman[16] says that while the QRS amplitude increases up to the 39 - 42 week, after the 42nd week the amplitude tends to diminish. This fact may be useful in judging post-maturity especially when the mother is not sure of her dates and the obstetrician is afraid of the anoxic problem of the post-mature foetus.

6. Individual Complexes of the Foetal Heart and Distress

As can be seen from the tracings, the P and T waves and the intervals between the components of the foetal impulse are present and can be seen but are just too small to be measured with any degree of accuracy. So distress at the present moment has to be decided by the changing rate and rhythm and its relation to the mother's contraction. However, if the components of the foetal impulse can be further boosted and so measured, then a whole new science of cardiography will be involved and some day will probably be just as important as electrocardiography and electroencephalography.

Summary

1. The EKG machine that has been developed is simple, inexpensive, and easy to operate.

2. In picking up a foetal heart, the machine is equal to a stethoscope and superior to it in certain types of irregularities of rate and rhythm.

3. Multiple births are diagnosed more easily by the machine than the stethoscope.

4. As the P and T waves and intervals between the component of the foetal complex are now almost large enough to be measured, the obstetricians are interested and demanding more information, especially regarding the changes of the foetal heart components and their modification in foetal distress. A quarter of all our cases are definite requests from the obstetricians.

5. The machine, or, a machine, when fully developed should give results that should make a great difference to foetal morbidity and mortality. This future machine is the object of our present research.

We wish to thank the research, technical and electronic assistants who have worked with us and acknowledge the patience and co-operation of the nurses and department of obstetrics at the Women's Pavilion, Winnipeg General Hospital.

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Pediatrics

The Healthy Perinate: "A Triple Entente"*
Introducing a Revised Classification of Perinatal Morbidity and Mortality

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A healthy baby is the ultimate aim of every doctor entrusted with a pregnancy. There are three factors or groups of factors which one must consider in this respect. There are the factors related to the mother; there are the factors related to the process of labor and to the placenta and cord; and lastly there are the factors related to the fetus himself. When all factors are normal and maintained in symphony, the net results should be a healthy baby. Unfortunately this symphony is not always maintained and approximately 3% of pregnancies end up in the death of the perinate.

The purpose of this paper is to study the interrelationship of the groups of factors mentioned above mainly to see if one can predict the outcome of the pregnancy before it terminates. There are special reasons for wanting to be able to do this. Firstly, it is difficult to diagnose and assess morbidity in the very young baby; signs are subtle and too often non-specific and diagnosis is therefore too often delayed beyond the critical point of effective therapy. In other cases clinical events transpire at such a rapid rate that, unless one is forewarned and ready beforehand, therapy cannot be instituted quickly enough to be effective. Lastly, there are conditions such as the hyaline membrane syndrome, or intracranial hemorrhage where results of therapy leave much to be desired and where prevention would seem a more effective approach. For these reasons attention is directed temporarily on the maternal, labor and placental factors and away from the baby itself.

In order to study the interplay of the various factors involved in a pregnancy we set up a revised classification of morbidity and mortality and exposed 797 perinates to it. By perinate we mean any baby who weighs 750 grams at birth whether liveborn or stillborn and who, if liveborn, has not passed the first week of post-natal life. The 797 cases were divided into two approximately equal halves, one-half consisting of perinatal deaths and the other half of a control group of survivors. The method of picking the controls was as follows: Every twenty-fifth premature and every third full-term liveborn who survived the first week was studied. The material in the study was taken from the files of the maternity floor at St. Boniface Hospital and forms a part of the Winnipeg Perinatal Mortality Research project.

Table 1
Perinatal Statistics (SBH 1954-58)

DEATHS:		
N.N.D.	199	
S.B.	184	
		383
CONTROLS:		
Premature	121	
Full Term	293	
		414
TOTAL		797

The revised classification as you see it on Table 2 is relatively easy to use. One studies the mother's history, her health throughout the pregnancy and physical findings at the time of delivery and thus determines a group of maternal factors which go into Column I. Column II consists of factors related to the process of labor and disorders of the placenta and cord, and you will notice that ante-partum hemorrhage comes into this column. The fetal conditions constitute a long list as expected, and require a double row of numbers. Our hope in using this classification is to be able to pick up certain patterns which might predict well ahead of time what type of problem the fetus is likely to encounter at birth, indeed long before birth.

Table 2
Correlative Classification of Maternal, Labor and Placenta, and Perinatal Factors

I MATERNAL	II LABOR AND PLACENTAL	III PERINATAL
0 No lesion	0 No lesion	00 No lesion
1 Acute infection	1 Infection of placenta and cord	01 Brain injury
2 Chronic infection	2 Placental insufficiency	etc.
3 Metabolic, endocrine and nutritional, incl. anemia	3 Cord compression	
4 Hypertensive renal disorder, incl. toxemia	4 Hemorrhage	
5 Heart disease	5 Dystocia, incl. inertia, disproportion	
6 Rhesus and other immunological or allergic factors and absorption of toxic substances	6 Op. vag. del.	
7 Other, incl. accident, ruptured uterus	7 Op. abd. del.	
	8 Others, incl. membranes ruptured 24 hours or more	

Table 3 shows how often the various groups of factors were normal in combination.

One might assume that if no lesions were found in any of the groups of factors that the baby would be healthy, but nothing is absolute in medicine and there was one stillbirth in the series, an intra-natal death, where mother, pregnancy, labors, delivery and placenta were normal and the baby itself showed no lesion except that it was dead. (cf. Table 3).

It was somewhat surprising to note that only one-half of the controls were normal in all respects. One might have expected a higher figure here.

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Table 3
Correlated Statistics of Maternal, Labor and Placental, and Fetal Factors in 797 Cases

	Deaths	Controls	Total
No lesion all factors	1 (0.2%)	212 (51%)	213
No maternal nor labor and placental factor	99 (26%)	42 (10%)	141
No maternal factor	177 (46%)	67 (16%)	244

Table 4 shows how often each individual group of factors was normal taken separately. In the controls the incidence is about equal for each group but in the death series complete normalcy was much more frequent with respect to labor and the placenta than with respect to the mother, and, of course, least frequent with respect to the perinate. It is of interest that the incidence of normalcy in maternal factors is about the same in the death as in the control series.

Table 4
Normalcy in 797 Cases

	Deaths	Controls	Total
No maternal factor	277 (72%)	320 (77%)	597
No labor nor placental factors	153 (40%)	314 (76%)	467
No perinatal factor	16 (4%)	331 (80%)	347

What are the important maternal factors? They are toxemia, infection and metabolic diseases in that order. It is somewhat surprising to note that in this series the incidence of these maternal factors, except for metabolic diseases, is the same for the deaths as for the controls. (cf. Table 5).

Table 5
Important Maternal Factors

	Deaths	Controls	Total
Toxemia, hypertension, etc.	40 (10%)	49 (11%)	89
Infection	24 (6%)	20 (5%)	44
Metabolic	16 (4%)	7 (2%)	23

Table 6
Important Labor and Placental Factors

	Deaths	Controls	Total
Hemorrhage (AP)	136 (35%)	47 (11%)	183
Operative vag. del.	25 (6%)	1	26
Dystocia	11 (3%)	15 (3%)	26
Infection	11 (3%)	1	23

Among the most important factors related to labor and the placenta (Table 6), there is one that stands out well above the others and that is A.P. hemorrhage. Indeed this is by far the most significant and most frequent single factor, either in terms of maternal factors or in terms of placental and labor factors. A.P. hemorrhage was seen in one-third of the deaths in this series and in one-tenth of the controls. Because of the importance of A.P. hemorrhage the lesions seen in the perinate in relation to this condition were studied especially. The following perinatal lesions were noted:

	Deaths	Controls
1. Anoxia	56	6
2. Abnormal Pulmonary Ventilation and Diffusion	13	2
3. Infection	12	1
4. Congenital Malformations	9	0
5. No lesion	10	35

Problem of Infection

Infection ranks third as a sequel of A.P. hemorrhage. If one, however, considers the converse, v.g. infection in the perinate, and relates it to factors in the mother, placenta and labor one finds that A.P. hemorrhage is the main and really the only statistically important antecedent factor.

Infection remains a problem in more ways than one. Apart from a retrospective relationship to A.P. hemorrhage, patterns remain elusive. For instance, one might expect to find perinatal infection as a sequel of maternal or placental infection; in the present series, however, this was not so, as the following statistics clearly indicate:

	Maternal Infection	Perinatal Infection
Perinatal controls	20	2
Perinatal deaths	23	3

	Placentitis	Perinatal Infection
Perinatal controls	1	0
Perinatal deaths	11	4

Early treatment of perinatal infection is important, but because of diagnostic difficulties in the individual case and the elusive nature of patterns mentioned above, hit or miss prophylaxis is often resorted to. In the present state of our knowledge there does not seem to be any alternative to this type of prophylaxis. Unfortunately prophylaxis is not always devoid of dangers and certain types of antibiotic therapy have themselves, in the past, added to morbidity and mortality in the perinate. Sometimes this has been related to dosage, sometimes to nature of drug; in most instances the victim has been a premature.

Some of the better known examples are as follows:

Complications of Antibiotic Therapy

Drug	Complication
Sulfisoxazole [1]	Kernicterus
Chloramphenicol [2]	Sudden death
Streptomycin [3]	VIII nerve damage
Intramuscular Tetracyclines [4,5] (but not oxytetracycline)	Neuropathy at site of injection with palsy (not always transient)

Summary

This paper introduces a revised classification of perinatal morbidity and mortality. A correlation of maternal, labor and placental factors, with perinatal factors in a series of 383 perinatal deaths and 414 perinatal controls suggests the following.

A.P. hemorrhage is the most important clinical abnormality preceding birth of baby. It is seen in one-third of deaths and in about one-tenth of controls. It usually means anoxia to the fetus but infection is another important sequel and it would seem advisable to consider the use of prophylactic antibiotics in any but the obviously healthy term perinate.

Infection is the third most important factor. Several problems persist with respect to infection both diagnostic and therapeutic. Diagnostically, signs are unreliable and patterns elusive — for instance, infection in the mother or placenta only occasionally resulted in perinatal infection in this series. Therapeutically, blind prophylaxis often has to be resorted to; this seems the only alternative in the present state of our knowledge but unfortunately this is not always devoid of danger as experience has borne out, particularly in the premature.

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Otolaryngology

Recent Advances in Ear Surgery

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With the advent of antibiotics, surgery for mastoid infection and its serious complications has dramatically decreased. Surgical procedures on the ear over the past decade and especially the past few years have been primarily concerned with the preservation of hearing and surgery for the hard of hearing patient. This has been brought about by several factors.

Primarily, a need for techniques to improve hearing has been obvious. Due to the efforts of certain otologic surgeons and after much research, specific basic principles and procedures were established which form the basis for present day ear surgery. A better understanding of the physiology of hearing and the introduction of the operating microscope have done much to standardize the newer surgical procedures.

The primary aims of all surgical procedures on the ear are:

1. To eliminate any threat of intra-cranial complications.
2. Obtain a dry ear.
3. Improve hearing.

Mastoidectomy

The simple mastoidectomy indicated for acute mastoiditis with cortical rupture is a rarity today. This is due to early and adequate treatment with antibiotics. The need for modified and radical mastoidectomy for chronic mastoiditis associated with cholesteatoma has not changed. Cholesteatoma is a threat and a potential cause of serious intra-cranial complications such as meningitis, brain abscess, etc. Its presence today as in the pre-antibiotic era necessitates surgery. Endaural approach eliminates the unpleasant and unsightly post-auricular depression and scarring.

The problem of obtaining a dry post-operative mastoid cavity has been solved in many cases by the use of Rambo's "musculoplasty." In the classical mastoidectomy, the mastoid and tympanic cavities have been left uncovered or have been lined with a skin graft. Because of poor or non-existent blood supply especially in a "free" skin graft, the "take" is in danger. By using an attached temporal muscle flap instead of the skin graft, the blood supply to the flap is assured and healing is usually prompt and a dry cavity is the rule. The musculoplasty procedure is ideal for patients who have a persistent running ear in spite of previous surgery or who have had to put up with ear discharge for a long period of time and are primarily concerned with a "dry" ear. A fenestration operation can be done with the "musculoplasty" in one stage or at a later date if necessary.

Tympanoplasty

This term denotes an approach to middle ear surgery rather than one single surgical procedure. The word infers the removal of all infection present together with techniques employed to preserve or actually improve the hearing. The operating microscope is essential in certain stages of this work.

The procedures are based on certain physiological principles.

The normal tympanic or middle ear physiology demands the existence of a patent external auditory canal, a normal receptor mechanism via a normally functioning tympanic membrane, continuity of the tympanic membrane and a normally functioning ossicular chain, with a mobile stapedial footplate, a normally yielding round window membrane, and finally a well regulated tympanic air space provided by normal Eustachian tube function. In the absence of a functioning ossicular chain it is necessary for the round window also to be shielded.

In one crucial respect, tympanoplastic surgery requires the same pre-requisite as fenestration and stapes mobilization surgery; namely, in the measurement and evaluation of cochlear reserve.

Wullstein made an excellent contribution to progress in this branch of surgery by giving us his schema, in which he presents five types of tympanoplasty based upon anatomical and pathological findings. Since these five types have been widely adopted and have simplified discussions, it appears logical to utilize them in this presentation. The designations "Tympanoplasty types I, II, III, IV and V" will apply to the Wullstein classification to be given below:

Type I: (Myringoplasty)

This refers to the closure of a perforation in the drum where there is an intact normally mobile ossicular chain and there are no other significant pathologic findings.

The closure may be achieved by use of a "free" skin graft usually taken from the post-auricular fold or an "attached" skin graft taken from the ear canal and rotated on to the involved drum. The use of vein grafts to close drum perforations had achieved popularity in the past few years. It is ideal for small central perforations and has the advantages of being easy to obtain (from the hand or arm); easy to work with (not as thick as skin); and physically more approaching the appearance of the tympanic membrane than a skin graft.

Type II: (Myringoplasty)

In this more advanced version of myringoplasty, there may be absence of a portion of the malleus or incus, but there is still physiological continuity of the entire ossicular chain in spite of these defects.

This may be termed an expanded myringoplasty, but basically it is the same sort of procedure involving only the repair of the acoustic receptor, so that the area difference between the drum and the stapedial footplate may be restored, thus restoring the sound pressure transformer action.

Type III: (Columellization operation or Myringostapediopexy)

In this very important type of procedure applied to cases where there is dissolution of continuity of function of malleus and incus, but normal anatomical and physiological integrity of the stapes and the stapes footplate, a graft is applied directly to the head of the stapes.

This may either be done in cases where there is still a serviceable peripheral tympanic membrane remnant, or in instances where there is no tympanic membrane at all, as in post radical mastoidectomy cases. In the latter instance a larger and thicker graft may be necessary, but the basic principle remains the same; namely, that the tympanic membrane (either restored or recreated) is anchored directly to the head of the stapes. In this approach, the piston action of the drum to the stapes footplate is still maintained, and the sound pressure transformation can be restored to a very efficacious degree, notwithstanding the loss of the lever action of the malleus and incus.

Type IV: (The Cavum Minor Operation or Sound Baffle Operation, or Round Window Operation)

In instances where there has been a loss of stapedial capitulum and crura, but where the footplate is still mobile, the creation of the Cavum minor, or closed hypotympanum, may yield sufficient sound protection to the round window membrane so as to restore the sound pressure difference between the two windows. In this procedure, a mucosal graft is rotated inferiorly from the promontory over the round window niche and covered with a skin graft in continuity with the Eustachian orifice, thus creating a small middle ear which has tubal continuity and in which the oval window region is exteriorized to air-bone sound. The round window acoustic baffle effect will frequently allow restoration of thresholds to the 30db. level. The obvious loss of the transformer action of the middle ear still exists, but the sound pressure difference may be adequate for significant gains in hearing.

Type V: (The Fenestration Operation Combined with the Cavum Minor Operation)

In instances where there is a fixed stapedial footplate there may still be hope for restoration of hearing by an adequate round window baffle procedure as described above, combined with fenestration of the horizontal semicircular canal, again yielding a level of possibly 30db. or better in some instances.

Surgery for Otosclerosis

In otosclerosis, the transmission of sound waves to the inner ear is interfered with because of fixation of the stapes in the oval window of the labyrinth. There is a mechanical blockage and in the early cases the auditory nerve and nerve endings in the inner ear are normal. With time, a certain amount of nerve degeneration occurs because of "disuse atrophy" (i.e.: the cochlea is not being stimulated).

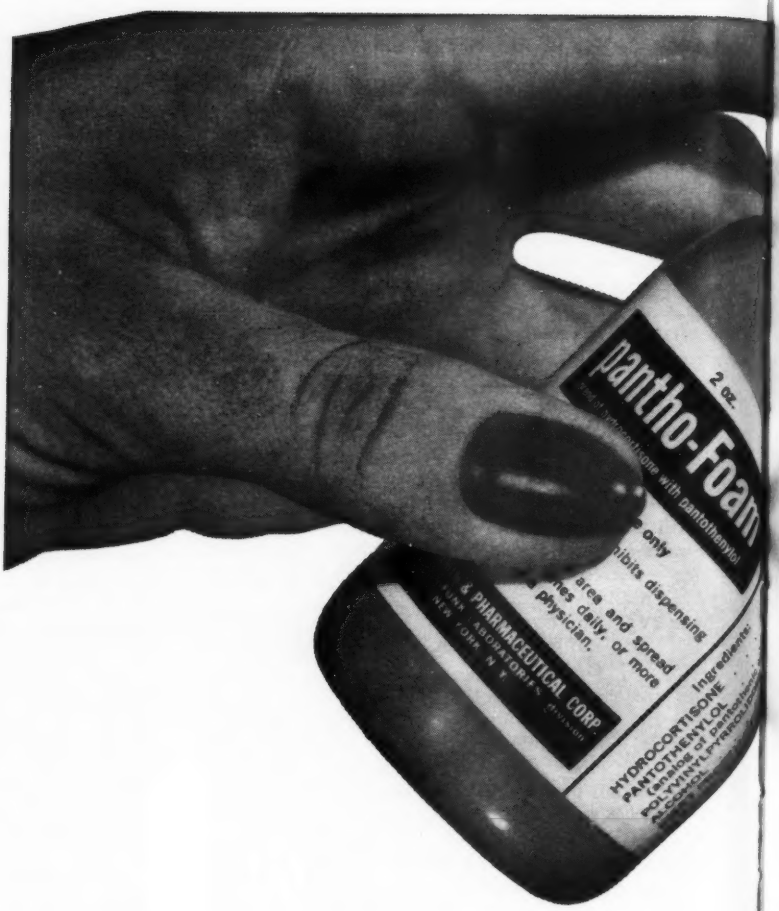
The fenestration operation was successfuly employed to by-pass the diseased area and make a "new window" in the horizontal semicircular canal. The sound waves enter the inner ear via the "new window" and are not conducted by the ossicles of the middle ear. Because of the latter the best result that can be obtained is to the 30db. level.

Mobilization of the stapes is the second procedure for improving hearing in otosclerosis. This is a direct approach to the fixed stapes. After reflecting the ear drum the stapes is visualized and mobilized by one of several techniques. The operating microscope is essential for this procedure. Hearing can usually be raised to within normal limits, as the sound waves travel via the normal route to the inner ear. Stapes mobilization has replaced the fenestration operation as the procedure of choice in otosclerosis.

There are numerous methods of achieving hearing improvement with the "stapes" operation. The "indirect" approach of mobilization by pressure and manipulation of the incus and head and neck of the stapes, as a rule produces only temporary improvement, as refixation usually occurs. In advanced otosclerosis the indirect method will not be sufficient to produce the desired results.

The "direct" or footplate approach has gained popularity in the past few years and has the advantage of removing the stapes and stapedial footplate thus preventing refixation. A polyethylene strut is placed so as to connect the incus to the oval window which in turn is closed by a vein graft or gelfoam pack. In "stapes" operations the hearing can be improved to the level of nerve conduction which remains.

In past decades and especially the past few years, there has been a dramatic change in surgical procedures on the ear. The rapid advance in otological surgery can be attributed mainly to two factors: a better understanding of the physiology of hearing and the introduction of the operating microscope. New techniques and procedures have been evident, and to the hard of hearing patient it has been a most significant period indeed.



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Editorial

S. Vaisrub, M.D., M.R.C.P. (Lond.), F.R.C.P. (C.), F.A.C.P., Editor

The Leaven of Medicine

The relationship of Medicine to its "related" disciplines, the Basic Sciences, is a subject favored by medical speakers called upon to deliver philosophically flavored orations on commemorative occasions. It is also a topic not without appeal to editors in a reflective mood. That neither the lofty addren nor the "soft" editorial carry much of a wallop is quite apparent. Indeed they are famed more for their soothingly soporific effects, than for their impact on the psyche. The theme offers very little to get excited about.

There are, however, exceptions. Unexciting as it may be, the theme has variations which are far from dull. An odd assertion, a pointed remark, an unexpected turn of phrase would waken the listener or reader to an awareness that the subject has controversial possibilities. On one such occasion we were roused from our reverie by a speaker's voice invoking an old fable, that of "The Eagle and the Spider," to make his point.

The fable, as we know, tells of a proud eagle who on reaching the "time-worn cedar tree of topmost Caucasus," found a spider on the branch above him. When asked how he arrived there frail and wingless, the spider explained that he did so by the simple act of fastening on the eagle's tail. Thus, commented the speaker, Medicine has fastened on to the tail of soaring Science to reach its present lofty heights.

To us this fable and its implications seemed most disturbing. Is this conception of the interrelationship of Medicine and Basic Science correct? Are we to accept the contrasting images, or is the parable misapplied?

The answer to this question must, of necessity, begin on a note of uncertainty. The demarcation lines between the basic and applied sciences are none too clear. Nor is the scientific status of Medicine well defined. Some regard Medicine as a natural science, others as a historical one, while there are those who contend that it is not a science at all, but an empirical art. Lest we sink in semantic swamps or crash into conceptual canyons, let us assume for the sake of simplicity that Medicine deals with the prevention, palliation and cure of disease, while fundamental science is concerned with what is euphemistically called the pursuit of truth.

Taking the above assumptions as a starting point, we are now ready to acknowledge that the pragmatic science of Medicine is heavily indebted to the truth-pursuing pure sciences of physics, chemistry, mathematics, and their less "pure" semi-applied cousins — the biological sciences. Acknowledging gratefully this debt, are we prepared to subscribe to the view that the traffic of indebtedness flows in one direction only? Are we willing to concede that we are dealing with a one-way street?

Not at all. It may well be that the Basic Sciences in turn owe a great deal to Clinical Medicine. War against disease has an impact on biology which is not unlike that of global wars on physical sciences. The incentive for intensive fundamental investigation often stems from a practical need. The flame of scientific discovery ignited by the spirit of quest is fanned and kept alive by the demands of circumstance. Fundamental research whether carried out in the laboratories of pharmaceutical establishments with an eye on the pocketbook, or in academic ivory towers with an eye peeping through the keyhole into the Great Unknown, are spurred by the pressing dictates of the necessities of Clinical Medicine.

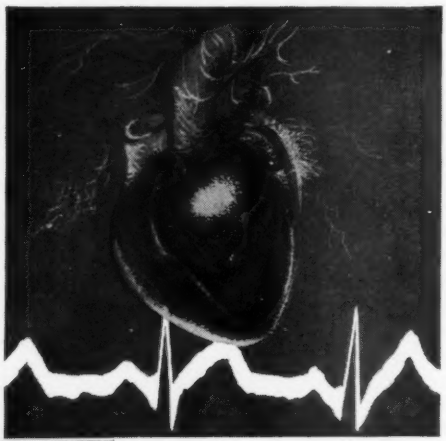
This stimulating catalytic effect of Clinical Medicine on Basic Science is only one aspect of their complex interrelationship, for apart from this indirect effect, Medicine has influenced Basic Science directly through the mass of its accumulated observations and investigations. In his introduction to "Heritable Disorders of Connective Tissue" Victor A. McKusick states: "Clinical investigation of pathologic states is as legitimate a method for studying biology as any other. The clinician can take his place with the so-called 'pure Scientist' in the group which is trying to fit together the vari-shaped pieces of the intricate jigsaw puzzle."

He lends further emphasis to this view in his dedication of the book to "the memory of Sir Archibald E. Garrod (1857-1936) and to all who believe as he did that the clinical investigation of hereditary disorders can shed light on normal development and biochemical mechanisms."

The fable of the Eagle and the Spider has little, if any, applicability to the interrelationship of Medicine and Basic Science. The impact of Banting, M.D. on biochemistry or that of Penfield, M.D. on neurophysiology refute its moral. Medicine is no parasite, nor is Science her host. The relationship is much more happily and constructively symbiotic, for just as the "leaven of Science," in Osler's memorable words, "leavens the whole life of the physician," so does its counterpart—"the leaven of Medicine"—leaven the life of the "pure" scientist.

Ed.

in congestive heart failure



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In Lighter Vein

. . . but Gentlemen all.

Some of my best friends are doctors. I am grateful to them for assisting my entry into this world, delaying my exit from it, as well as making my earthly journey less hazardous. Yet, I am always keenly aware of their one and only flaw — their lack of public spiritedness, the mark of good citizenship. Why do these noble sons of the noblest profession shirk their civic duties? Why are there no physician mayors, governors, legislators, ambassadors, heads of state?

Perturbed and perplexed I turned to my medical friends for an answer. To my surprise they vigorously denied all accusations implicit in my provocative questions. While admitting that the physician is not a homo politicus par excellence, they assured me that he is, nonetheless, an enlightened citizen very much interested in the socio-politico-economic problems of the day contributing to their solution in an inobtrusive unpublicized manner. Sensing my disbelief, they suggested that I visit the Medical Branch of the U.S.S.R. (University Social Studies and Research) Center to take a "look see" into the goings on.

Skeptical yet intrigued, I repaired to the Research Center where, according to my medical friends, unknown and unbeholden dedicated men in white do their bit for Society.

As I entered the imposing building I was met by a lovely young lady wearing a bright smile, but very little else. Stunned by the incongruity of the sight, I followed her meekly into a large and airy room where a big burly man shook my hand. Having introduced himself as Dr. Lawrence H. David, chief of the Department of Pornocardiography, he proceeded to guide me through the labyrinthine maze of his laboratory, talking all the while. "What is the most important problem of today?" — he thundered — "Nuclear war, hunger, unemployment, disease? Not by a long shot! The crucial problem facing the world today is Obscenity. Pornographic pictures, sexy sculpture, and, above all, lewd literature — these are the evil forces that threaten to destroy civilization. Parents are helpless, censors are powerless, preachers are impotent when faced with the scourge of Obscenity. Only medical research, can cope with it successfully. "Take the electrocardiograph" — roared the manic medic, pointing to an impressive piece of apparatus with numerous wires, at the business end of which a young man, oblivious of his surrounds, was reading a book — "a wonderful machine that tells us so much about the state of the heart muscle. Used in the past 50 years for detecting heart disease, it now serves a much nobler purpose, for it has become our strongest weapon in the struggle against pornography. It does the job" — went on the ebullient scientist, paying no heed to my look of incredulity — "by recording electrical reactions of the heart in a subject exposed to obscene influences. It will reveal with scrupulous exactitude, black on white, the deleterious effects of Demon Lust on the heart muscle. Just look at the electrocardiogram recorded while this young man, whose hands and feet are hooked up to the electrodes of the machine, is reading avidly Lady Chatterley's Lover. If you think it is abnormal now while he is still on page 112 (paperback edition 1958), wait till he gets to the shenanigans on page 244. Yes!"— exclaimed Dr. Lawrence H. David — "when we confront this lecherous youth with the tracing of his pornocardiogram, we shall see him cringe and tremble, frightened enough to forswear pornography forever. We plan to record thousands of pornocardiograms and, by publicizing them widely, scare the public into a state of pornophobia, the like of which has not been known since the Pilgrim Fathers landed on Plymouth Rock. The porno-electrocardiogram will ensure a reign of virtue which will transcend the dream of a Savanarola."

Overawed by the doctor's enthusiasm and impressed by his eloquence, but not at all convinced, I quickly volunteered for his experiment. Nothing like doing it yourself. Unfortunately, just as the pulchritudinous scantily clad nurse, having handed me an illustrated copy of "Lolita" — the standard erogenic stimulus reserved for aging rouès — began to attach the electrodes, Dr. David was called up to attend a volunteer who thrombosed a coronary while reading Peyton Place. This, of course, necessitated the postponement of my modest contribution to medical research.

Leaving, not without regret, the fascinating premises of Pornocardiography, I entered the adjacent offices of the Veroballistocardiographic Research Unit. The director of the unit, Dr. Vera Emesse Truedame, greeted me with a friendly nod, and without any prodding on my part proceeded to explain to me the purpose and workings of her research project. "The public" — asserted Dr. Truedame — "is forever faced with the necessity of making important decisions. Proponents and opponents of various creeds and ideologies make bold assertions and extravagant promises which affect these decisions. How is one to tell the true from the false? How is one to know which of the two televised prominent personalities is telling the truth? Both look you straight in the eye with a disarming smile, both speak in dulcet tones, both quote statistics. Whose eyes, whose voice, whose figures are to be believed? Here Medical Science steps in with a useful aid. Discarding the conventional lie detecting Polygraph as totally inadequate for the television screen on which its projected,

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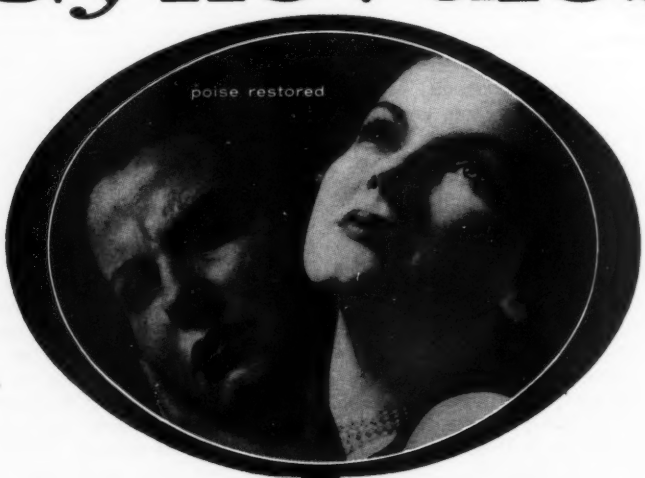

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numerous lie "peaks" submerge the occasional truth "dips," it replaces it with a newer apparatus — the veroballistocardiograph which records the output of the heart as it is affected by veracity. A truth detector rather than a lie detector, inconspicuously attached to the speaker, this device enables the viewer to choose the right candidate, the correct ideology, the proper philosophy — a true veritas ex machina." I must admit that the quiet earnestness of Dr. Truedame impressed me a great deal more than the flamboyant oratory of the overweening Lawrence H. David, even though I was somewhat disturbed by the possibility of the "truth detector" becoming a household tool destined to wreck many a marriage.

My next stop was the "Psycho-conditioning" laboratory a few doors away where obese subjects were conditioned by a hypnotist to believe that the stalk of celery they were munching on was a juicy steak and the carrot they were about to consume was a creme souffle. A few of these seances, and the fat Trilbys — so I was told — were conditioned for life to be able to substitute low calorie foods for the real McCoy without a sense of deprivation. Similarly, inveterate alcoholics were hypnotically conditioned to equate beer with water and champagne with Schweppe's. It was most gratifying to see them stagger away in alcoholic semi-stupor after drinking a few glasses of innocuous liquid. The beneficent effect of this conditioning on the poor victim of ethanolic indulgences, his family and society as a whole, will be immeasurable.

As I was about to leave the premises, my eyes caught sight of a curious sign on one of the doors — "Bureau of Status-tics and Health Information." On drawing the attention of the commissionaire who ushered me in, to a possible error in spelling, I was surprised to be told that this indeed was no error. The Bureau apparently dealt with status. An electronic Statuscope in the center of the room would reveal instantly the status of every tax payer in the community. I was particularly impressed by the special department for status identification of the doctors practicing in the city. Here was an invaluable shopping guide for anyone in search of the right physician. Much more serviceable than a specialist's directory which confuses more often than it enlightens (what is Internal Medicine or Rhinosurgery?) this register gives information about the doctor's height, weight, color, race, creed, type of house he lives in, kind of car he drives, clubs he belongs to — information that really matters.

At this point a gentleman who introduced himself as Dr. Paul Dudley Black, steered me away from the status registers to what he regarded as a more important department — the VIP Medical Dossiery. "Here" — said Dr. Black, pointing proudly to the countless paper filled shelves — "are filed the daily health records of all the important people in the land. The public has a stake in these notables and is entitled to the knowledge of the most intimate details of their health from the rate of their pulse to the functioning of their bowels."

Just as I was getting interested in this great public service, my almost forgotten Bikini-clad guide slinked into the room with the glad tidings that Dr. Lawrence H. David was now ready to take my pornocardiograph. Quickly taking leave of Dr. Black I tiptoed after the nymphoid charmer, fully convinced that the doctor is keeping his end up. As public spirited as it is noble, the medical profession is not letting us down.

Homer Sapiens.

ANNUAL MEETING

Manitoba Medical Association

(CANADIAN MEDICAL ASSOCIATION, MANITOBA DIVISION)

October 10th, 11th, 12th and 13th, 1961

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Letter from the Congo

This letter was received from Dr. A. H. Khazei, who is in the Belgian Congo, as a member of the Canadian Red Cross Medical Team.

It was thought that its contents would be of interest to readers of the Manitoba Medical Review.

Canadian Red Cross Society,
Hopital Congolais,
Gemena, Congo.
March 19, 1961.

Dear Dr. Ferguson:

I have been in the Congo now for more than a month. I have been assigned to Gemena, in the northeast part of Congo about 1000 kilometers from Leopoldville.

Gemena is a small town with a population of just over 10,000 people. The hospital, which is "a centre al'hospitalier" has a capacity of over 400 beds and besides serving the town of Gemena it takes care of patients from distances of 100 to 150 kilometers.

When I arrived, I found the hospital very dirty and disorganized. The patients are cared for on wards, each consisting of about 20 beds, and when a patient is admitted to the hospital he is accompanied by all members of his family. The hospital provides beds and drugs, but the patient has to provide his own food, which is prepared for him outside of the room by his family.

The hospital is quite well equipped and has x-ray equipment, a laboratory and a pharmacy. There is, however, a great need for personnel and technicians. The supplies of drugs were badly depleted, and I appealed to The Red Cross for additional supplies. They have sent me eight big boxes of drugs, sutures, i.v. solutions, dressings, etc., but these will not last long, and I am hopeful that further supplies will be sent to me in the near future.

My first job was to organize the operating room and the sterilization facilities. I requested from the Administrator of the territory more personnel to clean the hospital. Six additional orderlies were provided, and they have been able to do a fairly satisfactory job.

Concerning the work at the hospital, I find that I have to do all kinds of practice in addition to surgery. There is no x-ray technician, and so I take all my own x-rays. I do medicine, obstetrics, surgery, ophthalmology, etc., but recently another doctor, a Belgian, has arrived, who now looks after most of the medical problems. I now, therefore can concentrate mostly on surgery, obstetrics, gynecology and orthopedics. To date, I have done many operations. Most of them are emergencies, such as strangulated hernia with bowel resections, incarcerated hernias, and colon resections. I have also done several subtotal thyroidectomies for toxic nodular goiter, a few hysterectomies and some amputations. There are a good number of fractures to be treated.

The work is very interesting and I am very pleased I am getting this experience. There is no anesthetist at the hospital, and so I do all my work under local, epidural or spinal anesthesia.

The lesions encountered are quite varied. To my surprise, I have not yet seen a single case of appendicitis. On the other hand, one finds all kinds of infectious diseases, huge and enormous tropical ulcers, and huge hernias. About 90% of them are direct and most are so large and of long duration that the repairs are difficult. Fibromyoma of the uterus is common.

When I first arrived in the Congo, I spent a few days in Leopoldville. There, I visited the Institute for Leprosy "L'hopital LaRive" which consists of 110 beds. Altogether there are about 900 cases of leprosy at Leopoldville, so that about 800 of them are treated on an ambulatory basis.

At Gemena I have seen a few cases of leprosy, but tuberculosis is much more common. Duodenal and gastric ulcers are very rare here, and on discussing this with one of the professors at the University of Levanium (at Leopoldville) I was told that they see a few peptic ulcers in the more civilized natives and almost none in the ordinary natives. I have seen a few instances of gall bladder disease, but liver abscesses and primary tumors of the liver are far more common.

The political situation is not too bad and is rather quiet at the present time.

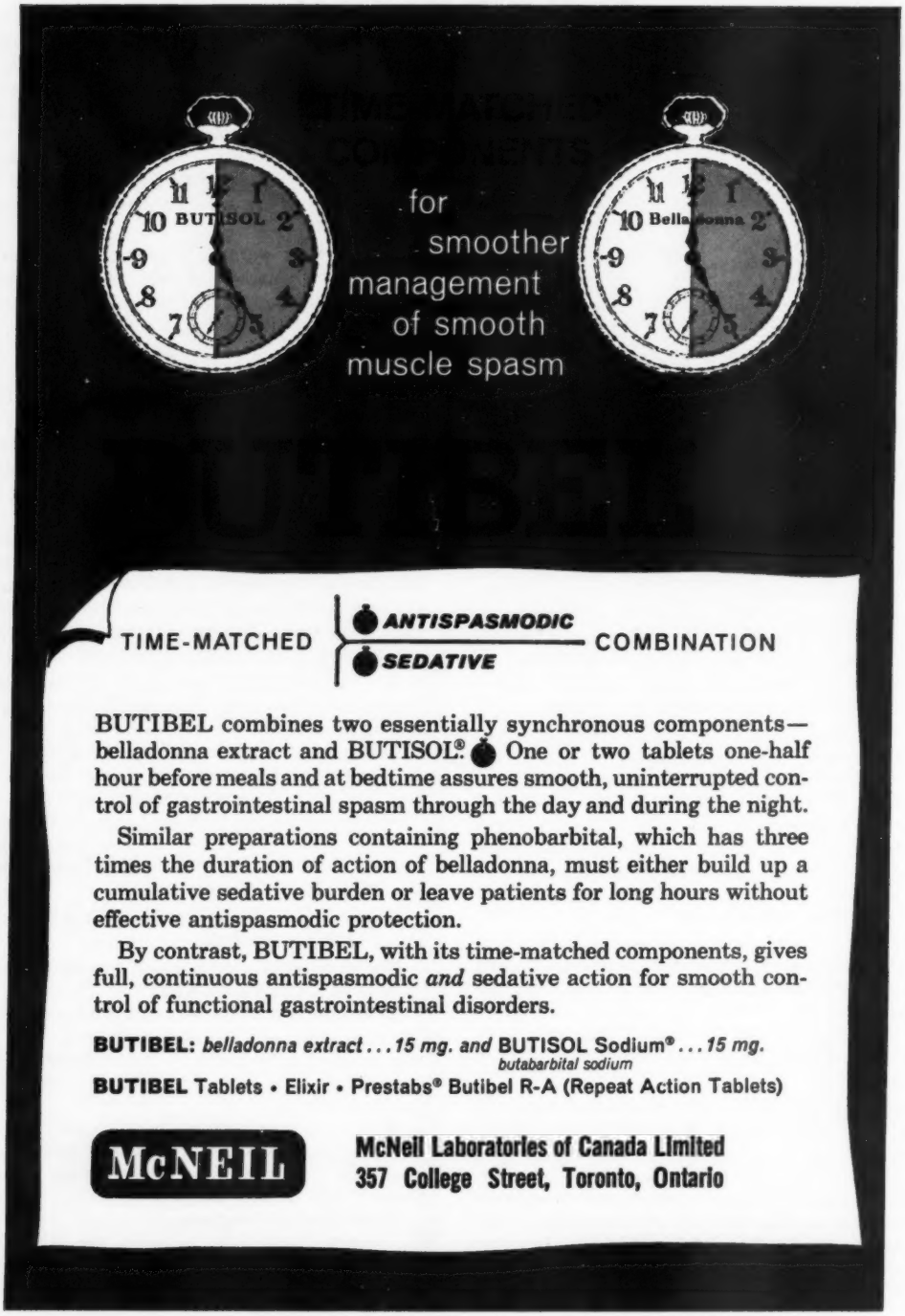
The climate is very hot and humid, but at night it does cool down somewhat.

The food is terrible — in fact there is very little of it; no potatoes, no meat or butter. The natives eat whatever they find — groundnuts, wild nuts, manioc (a sort of potato, but far from it) and smoked fish.

This is a great experience for me and I have seen many things that you would think were impossible. I shall tell you all about my experiences when I return to Winnipeg.

With kindest regards.

Dr. A. H. Khazei.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Book Review

Atlas of Obstetric Technic, Deluxe Edition. By J. Robert Willson. Illustrated by Daisy Stilwell. Published by The C. V. Mosby Company, St. Louis, 1961. Price $16.00.

Superlatives and words of praise come easily in reviewing this book. Its attractive, durable binding and high-grade paper make a proper setting for what is in the truest sense of the term a work of art. The large illustrations, most of which are semi-diagrammatic, admirably perform their expected function of making it easy to follow the descriptive text. In addition, because of their arrangement and uncrowded spacing, they transform many of the pages into artistic compositions which are a delight to the eye. The text is brief; it is not until one reads it critically that one realizes what a wealth of information it contains in addition to its primary function of describing the technic of a wide range of obstetric procedures.

In the preface the author says the book is intended as a source of reference for the resident in training, the general practitioner, the general surgeon in circumstances which make it necessary for him to perform operations for delivery, and the specialist. In my opinion he might well have included the medical student who could derive considerable benefit from reading some of the sections, notably that dealing with normal labor and delivery, and the pages discussing the indications for Cesarean Section.

With regard to content, the teachings are remarkably similar to those generally followed in Winnipeg. A few exceptions are worth mentioning. Outlet forceps, page 102, and low forceps, page 104, (in Winnipeg we use these terms as synonymous) are removed before actual delivery of the head. With regard to postpartum hemorrhage, page 54, the remark: "no time should be wasted in attempts to inspect the cervix and vagina for injuries" suggests that Doctor Willson has not had the pleasure of the quick and satisfactory exposure provided by Goodwin's Shovels. Personally I have never had to deal with an acute inversion of the uterus; if I do I would like to try the hydraulic pressure method of replacement which is not mentioned in the book. Also the advice, page 60, to separate the placenta before replacing the inverted fundus, is contrary to that given in most textbooks. In Winnipeg hospitals a diagnosis of fetal distress based on a slow or irregular heart rate is considered an indication for Cesarean Section; it is therefore rather disconcerting to read on page 239, "If the heart rate is constantly slow and irregular Cesarean Section is usually contraindicated."

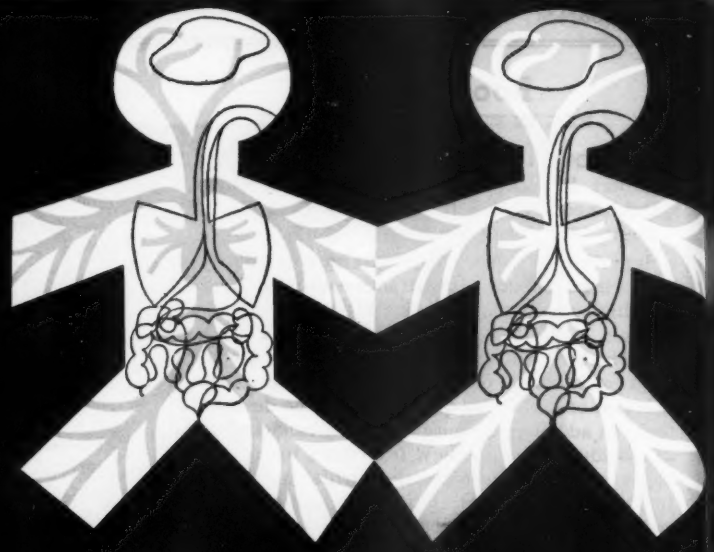
The one section which I would like to have seen handled differently is that dealing with breech presentations. If the teachings given in this book are followed, then it is not surprising that in some centres routine elective Cesarean Sections are being advocated in all cases of breech presentations. In the Atlas this section deals first with normal breech delivery followed by breech extraction and the management of various difficulties. However, the "normal breech delivery" is actually what most of us regard as a breech extraction begun as soon as the buttocks present and give the obstetrician something to which he can apply traction. Succeeding illustrations then show what must almost inevitably happen as a result of traction applied at this time; the arms become extended and the head becomes partially deflexed. Thus what might have been a spontaneous breech delivery becomes a complicated breech extraction, an operation generally conceded to involve a higher perinatal mortality than does Cesarean Section.

If only Daisy Stilwell's talents had been utilized to show in pictorial form what happens when an unattended parturient delivers herself of a frank breech! In such a case I visualize the buttocks delivering themselves, probably after producing a rough episiotomy. Because no traction is applied the arms remain folded across the chest and offer no difficulty. The head remains fully flexed and offers its smallest available diameters. The cervix cannot clamp down around the neck because it is held open by the feet which are still located just below and beside the ears, and in the squatting position the head practically falls out because of the weight of the baby. Such a normal sequence of events cannot be expected in every case. The obstetrician's role as always should be to stand by and interfere only when necessary. In the case of a breech delivery such interference occasionally involves traction as soon as the buttocks present or even before. But before he applies such traction the doctor should consider that the procedure he is embarking on demands at least as much technical skill as does a Cesarean Section and carries a higher rate of perinatal mortality and possibly maternal morbidity.

To select sections of the book for special commendation is difficult because they are all so well done. That dealing with placenta previa is a superb example of concise English such as is seldom found in medical literature. Anyone doing obstetrics who is not quite sure how he would manage a case of impacted shoulders should read the section on "Shoulder Dystocia." In less than ten minutes he can learn how to deal with this emergency which does not permit time to call a consultant.

The DeLuxe edition of "Atlas of Obstetric Technic" is a book of which the publisher, author, and illustrator can all be justly proud. It would make a very welcome gift to any recent medical graduate or resident who plans to include obstetrics in his practise.

R. F. F.



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largest distribution volume

Of the four tetracycline analogues "oxytetracycline was found to have the largest distribution volume."[1]

high concentrations at the site of infection

"The local concentration is particularly important in the therapeutic value of antibiotic treatment. In this connection, the concentration of the antibiotic in the tissue locally is far more important than its concentration in the plasma."[2]

few side effects

"An analysis of records of bowel action of 288 patients treated with tetracyclines (including Terramycin) does not confirm that any of them is more or less liable to cause diarrhea than the others."[3]

Pfizer

Science For The World's Well-Being

PFIZER CANADA
5330 Royalmount Avenue,
Montreal 9, P.Q.

references:

1. Kunin, Dornbusch and Maxwell Finland Journal of Clinical Investigation, November 1959.
2. Spitzy and Hitzenberger Antibiotics Annual, 1957-1958.
3. Garrod and Waterworth Antibiotics Annual, 1959-1960.

Association Page

M.M.A. Annual Meeting, 1961

Arrangements are in progress to insure that this meeting is another successful event.

The location this year is the Royal Alexandra Hotel. The dates, October 10th to 13th inclusive. The Scientific Program Committee advises that the following guest speakers have confirmed acceptance:

C.M.A. Speakers:

Frederick M. Woolhouse, Montreal General Hospital (Surgeon)

Ronald V. Christie, Royal Victoria Hospital, Montreal (Professor of Medicine)

Other Speakers:

Ralph A. Deterling, Jr., M.D., New England Center Hospital, Boston (Surgeon)

Edward H. Rynearson, Mayo Clinic, Rochester, Section of Endocrinology

Ancel Keys, Mayo Clinic, Rochester.

A symposium on Medical Economics has been proposed and plans are being made to have this included in the program.

M.M.A. Committee Chairmen are reminded to consider preparation of their reports to the Annual Meeting.

☆

Brief to the Commission on Medical Education in Manitoba

The M.M.A. Brief was presented to the Commission on March 21st. This submission culminated many weeks of effort by members of the Economics Committee and others who contributed valuable assistance.

An expression of appreciation and a copy of the Brief has been sent to those who made written submissions in response to the Association's request for opinions.

The Association has been represented by observers during the presentation of briefs from other organizations which includes the College of Physicians and Surgeons of Manitoba; the University of Manitoba, Faculty of Medicine; Misericordia Hospital; Grace Hospital; Children's Hospital; Winnipeg General Hospital and St. Boniface Hospital.

It is understood that a brief will be presented by the Provincial Government, Department of Health and Public Welfare.

☆

Canadian Pharmaceutical Manufacturers Association — Medical Section

A meeting with this group was held on March 20th. This Section which is a new affiliate of C.M.A. is interested in the relationship between the medical profession and the drug industry.

As a result of the meeting the M.M.A. Pharmacy Committee is preparing a questionnaire for circulation to members. This will ask questions as to where the physician obtains his knowledge about drugs and experience on reliability of drugs and if the products are introduced before sufficient information on efficiency and toxicity are available.

☆

Inhalation Therapists

At a recent M.M.A. Executive meeting it was decided that the Manitoba Division support the formation through C.M.A. of some body to regulate, train and approve Inhalation Therapists.

This request was presented to C.M.A. by the Canadian Anaesthesists Society who felt an organization to train and set standards similar to arrangements for radiological and laboratory technicians was desirable.

It was suggested that these persons may be more appropriately termed technicians rather than therapists.

☆

C.M.A. Annual Fees

There has been an idication from C.M.A. that their fee structure requires review. They have had two unusual years as far as expenditures are concerned, particularly 1960. This has been occasioned by increased activities affecting operating expenses and assistance extended to the Saskatchewan situation.

A $5.00 annual increase has been suggested.

M.M.A. has also experienced increased activities and expenditures and they may have to follow the trend found necessary by other divisions and consider a fee increase.

☆

C.M.A. Gold Medal

The C.M.A. has decided to recognize members by presentation of a gold medal similar to that of the B.M.A. Only one gold medal will be awarded in any one year, but there is no obligation to present one each year.

Qualifications are: outstanding service in the field of medical organization; outstanding service to the people of Canada in raising the standard of practice; outstanding service in the advancement of the arts and sciences in medicine.

☆

Term Life Insurance

The initial period to obtain additional coverage through the Travelers' group closed on April 1, 1961. We understand that of the 400 in the group, more than 200 signed for additional coverage. This represents more than $5 million of new business.

Only members of the Travelers' group were canvassed in respect to the increased coverage. Others who may be interested can apply, and acceptance will be based on evidence of insurability.

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5 x 10-cc. vials— 1,000 International Units per cc. (approx. 10 mg./cc.)
5-cc. vial —10,000 International Units per cc. (approx. 100 mg./cc.)

Reference:

Intravenous Heparin—Its role in the Management of Acute Thromboembolic Diseases.

W. Ford Connell and George A. Mayer
Applied Therapeutics, May, 1960, Vol. 2, No. 5, 371-375.

CONNAUGHT MEDICAL RESEARCH LABORATORIES
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Sickness and Accident Disability Insurance

It has been recommended by the Insurance Committtee that a change in Underwriter may result in more favorable premium rates. Submissions were requested from interested companies and the Committee spent many time-consuming meetings reviewing and comparing the submissions.

The Committee has recommended that the Great West Life Assurance Co. be selected as the carrier and at the present time contract details are under review. Specific comparable information will be made available to all members in order that they may choose whether or not they wish to remain in the present group or change to the Great West Life group. It is possible that this information may be available prior to this publication.

☆

Willard Commission Report

The Association has received a copy of the report prepared by the Manitoba Hospital Survey Board. This is a 500 page document, not yet produced in summarized form.

☆

Boundaries — District Medical Societies

Suggestions have been made on various occasions that certain District Medical Societies amalgamate and the boundaries of others be changed in some respects.

Dr. Thomas of Portage la Prairie was recently asked to Chair a Committee to study the matter and submit recommendations to the Executive. Dr. Thomas will, no doubt, be contacting representatives from the Districts and will, of course, be interested to hear comments on this subject from all interested members.

☆

Indiana State Police Exhibit

The Medical Aspects of Traffic Accidents Committee has been particularly interested and active in the field of accident prevention education.

In view of the fact that accidental death and injury is one of the main public health problems of the day, it is most appropriate that the Committee recommend the Indiana State Police Crash Injury Research Exhibit be shown to the general public at the Red River Exhibition under the sponsorship of the Association.

This recommendation was endorsed by the Public Relations Committee and approved by the Executive.

The exhibit is of top-notch professional calibre, staffed by two State troopers who have worked with the exhibit for the past 10 years on a full time basis. Governor Matthew E. Welsh of Indiana has been most co-operative in allowing the exhibit to come to Winnipeg and we are also grateful to the Red River Exhibition for the interest they have shown.

The Indiana State Police exhibit is based on the result of traffic accident surveys and is directed towards the prevention of traffic accidents and safety devices which may be used in automobiles. The Medical Aspects of Traffic Accidents Committee is currently seeking the assistance of local police officials in order that the Committee may carry out a similar type survey in the Province of Manitoba. It is felt that the data obtained from such a survey would prove valuable to determine the effectiveness of various safety devices and may lead to suggested design changes that may save a life, reduce or prevent injuries. R.P.H.S.

☆

North of 53 District Medical Society

A meeting of the District was held on March 15th and 16th, 1961, at The Pas. Those present were as follows:

Guests from Winnipeg: Drs. J. D. Adamson, representing the M.H.S.P.; F. G. Allison, Internist; F. H. Burgoyne, Pathologist, St. Boniface Hospital; Dr. L. R. Coke, Internist; T. K. Goodhand, Surgeon; M. T. Macfarland, Executive Director of the M.M.A.

Member from Lynn Lake: Dr. R. A. Christie.

Member from Thompson: Dr. J. B. Johnston.

Members from Flin Flon: Drs. H. L. McNicol, A. H. Smithen.

Members from The Pas: Drs. M. W. Black, S. L. Carey, H. N. Colburn, D. L. Gemmill, J. Leicester, P. Lommerse, J. Lopez-Perez, J. J. MacMalon.

Additional guest attending: Dr. C. H. Ling, Department of Indian Affairs.

The meeting began at St. Anthony's Hospital at 3:00 p.m. In the absence of Dr. G. Willson, President of the Society, Dr. A. Smithen was in the chair. This portion of the meeting was devoted to very educational and practical papers given by some of the Winnipeg guests. Dr. Allison spoke on functional gastro-intestinal complaints. Dr. Goodhand discussed ventrical hernias and Dr. Coke talked on anti-coagulant therapy. The meeting was adjourned to Dr. Leicester's home for refreshments with the wives of those members present. Following this a delicious dinner was served to the members of the Society by the Sisters of St. Anthony's Hospital. Dr. Leicester expressed the gratitude of those present for their kindness.

The meeting resumed officially at 8:00 p.m. Dr. Smithen was again in the chair. Nominations for Officers of the Society for the forthcoming year were received by the chair. The following were elected:

President: Dr. J. B. Johnston, Thompson
Vice-President: Dr. R. A. Christie, Lynn Lake
Secretary: Dr. L. Rustige, Thompson
Representative to M.M.A. Executive Committee:
Dr. J. Leicester, The Pas.

Disappointment was expressed by those present at the failure of the representative from Churchill to appear once again at the Society's meeting.

When there's a pram in her future,

She *knows*. And the moment is bright. Now... to preserve her serenity throughout the coming months. ■ One way is to make sure mother-to-be is getting the right kind of nutritional support —such as that provided by Pramitabs. For Pramitabs complement the sound dietary regimen you'll give your pregnant patient with: (1) phosphorus-free calcium; (2) well-tolerated iron, in the form of ferrous fumarate; and (3) the other essential vitamins and minerals. ■ Your patient will be grateful, too, for Pramitabs' easy dosage schedule. In most cases, a Filmtab a day is all that's needed to carry her through term. ■ As for a reminder to take her daily supplement, the slim, graceful Table Bottle will take care of that.

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Various methods to encourage their attendance were discussed. The chairmanship of the meeting was then handed over to Dr. Johnston, President-elect.

Dr. H. L. McNicol, as President of the Manitoba Medical Association, spoke to the group on the need of more interest on the part of the medical profession in the maintenance of the medical economics, medical problems, and improvement of public relations. In this matter he introduced the subject of Tissue Committees. Forthwith Dr. Allison, Past President of the Manitoba Medical Association, and Dr. Macfarland, Executive Director of the Manitoba Medical Association, spoke further on the matter of Tissue Committees. Dr. Burgoyne then gave an outline of the particular workings of such a committee, emphasizing the subsequent improvement in medical standards and pointing out that the committee acts not as a policeman over the members of the profession but rather as an educational instrument for the profession. He suggested that it would be preferable to change the name subsequently to the Professional Educational Committee. Those nominated to serve on the first Tissue Committee were: Dr. Leicester, Dr. Lommerse, Dr. McNicol, Dr. Percy Johnson and Dr. Blaine Johnston. It was suggested that Dr. Leicester be named chairman for the following year. To conclude this portion of the meeting, Dr. J. D. Adamson discussed problems of the M.H.S.P. The meeting was adjourned.

Entertainment was held following the meeting at the home of Dr. Colburn.

The meeting resumed for its final session at St. Anthony's Hospital at 10:00 a.m. on March 16th where personal and local matters were discussed between individual members. Ward rounds were then held. The meeting of this session of the Society was then concluded. The dates of the next meeting will be decided at some future time.

M. T. M.

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Obituary

Hamilton Bailey

Mr. Hamilton Bailey, renowned British surgeon, died on Sunday, March 28th in Malaga, Spain.

To students of surgery, undergraduate and post-graduate, in the British Commonwealth and in many other parts of the world, the name Hamilton Bailey is a memorable one. I believe that it was by his writing—more than by anyone else — that British surgery became esteemed and renowned throughout the world. In the period between the wars—to my generation of medical students — Bailey's "Demonstrations of Physical Signs in Clinical Diagnosis" and Bailey & Love's "Textbook of Surgery" and Bailey's "Emergency Surgery" were perhaps the best known examples of British surgical writing. They were lucid, they were well illustrated and with rare judgment they pointed up what was important in the welter of information a student has to assimilate. The repeated editions of these works is ample evidence of the sustained demand by succeeding generations of students.

To some of us from the "Dominions", it has seemed rather curious that in his own country there appeared to be less than full recognition of Hamilton Bailey's importance in the growth of the reputation of British surgery throughout the world. Without entering into the subtleties of the origin of honors lists, it was surprising that a name, towering across the borders, should not have parallel recognition within. But such are the ways of contemporary men.

Hamilton Bailey had among his many gifts great charm and friendliness. Not only were his clinics but his home always open to visiting students without regard to race, color or creed. Innumerable "colonials" found a warmth and a hospitality so hard for the shy, unheralded visitor to find. Veta and Hamilton Bailey's home became a haven for so many of us on subsequent visits to England. There friendships were formed enduring beyond time and space.

Thus in many parts of the world there is a real personal sense of loss in the death of a great man and a close friend. Only Veta can understand this fully and her we face from many corners of the world in warm and deep sympathy.

Alan Klass, M.D.

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*MELLARIL a broad-spectrum tranquillizing agent virtually devoid of all side effects.

DOCUMENTATION ON MELLARIL
USE OF THIORIDAZINE (MELLARIL) IN A VARIETY OF CLINICAL SETTINGS[1]

A. L. Jones M.D.† D. J. Lewis M.D.‡ and A. Miller M.D.,§ Toronto

"Search for a broad-spectrum, innocuous tranquillizing agent with reliable potency has been continuous because of the latent hepatic danger of the earlier agents and the basal ganglion disturbances of the later compounds. A particularly promising compound, thioridazine hydrochloride, was first reported upon clinically in 1958 by Fleeson[2] and Cohen[3]. Further reports by Azima[4] and Sloane[5] have been made in Canada. Trials to date have shown a potency which compares well with that of chlorpromazine. There have been no reports of jaundice, and few of extrapyramidal disturbance . . . Expectations from previous reports were confirmed by the Drug Research Unit Study".

SUPPLIED: Mellaril tablets, 10 mg., 25 mg., 100 mg.

REFERENCES

†Clinical Director, Toronto Psychiatric Day Centre; Clinical Teacher (Psychiatry), University of Toronto.

‡Assistant Psychiatrist, St. Michael's Hospital; Associate Professor (Psychiatry), University of Toronto.

§Clinical Director, Ontario Hospital, Toronto; Assistant Professor (Psychiatry), University of Toronto.

1. From the University-Provincial Drug Research Unit, Toronto: *Can. M.A.J.* 83: 948 (1960).
2. Fleeson, W., Glueck, B. and Herstad, G.: *Univ. Minnesota M. Bull.*, 29:274, (1958).
3. Cohen, S.: *Am. J. Psychiat.*, 115:358, (1958).
4. Azima, H., Durost, H. and Arthurs, D.: *Canad. M. A. J.*, 81:549, (1959).
5. Sloane, R. B. and Haden, P.: The use of thioridazine (Mellaril) in psychological disorders (to be published).

*Reg'd. T.M.

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*REG. TRADE MARK

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Social News

Reported by K. Borthwick-Leslie, M.D.

Congratulations en masse are in order for all of our graduates who do us honor in scholastic awards:

Top award, the John and Mary Markle Foundation, New York, of $30,000 scholarship for Medical teaching staff, was recently presented to Dr. Wm. Earl Shepherd, M.D., B.Sc. Med. '53, one of five Canadians to win the award. Dr. Shepherd, formerly of St. Vital, Man., is now Assistant Professor of Pathology at the University of British Columbia. Under the grant regulations the U. of B.C. will receive $6,000 per year for five years in support of his studies.

Mrs. Shepherd, daughter of Dr. and Mrs. T. H. Williams, St. James, is a graduate of the W. G. H. School of Nursing and B.A., U. of M.

☆

Lt. Col. A. M. Davidson of Winnipeg has been appointed Chief of Surgery at the Toronto Military Hospital.

☆

The National Heart Foundation has awarded grants to 27 scientists, four to the U. of M.:

Dr. T. E. Cuddy, Dr. N. K. Hollenberg, currently on post graduate research work in Sweden, who will return to Winnipeg to continue his work; Dr. I. R. Innes and Dr. S. I. Yameda who are continuing research at the College.

Several other of our doctors have received "grants-in-aid" from the Heart Foundation. These include Drs. S. A. Carter, R. M. Cherniak, Morley Cohen, N. C. Hill, L. G. Israels, Mark Nickerson, H. T. G. Strawbridge and Dr. W. Zingg.

☆

Dr. J. A. MacDonnell, recently appointed to set up a Geriatrics program in Winnipeg, has been awarded a scholarship by the National Council of Jewish Women. Dr. MacDonnell plans on studying geriatrics in Oxford, England and the Netherlands.

Not only did Dr. Hugh Taylor, Children's Hospital, get himself married March 25, 1961 to Elizabeth Brennan, daughter of the late Mr. and Mrs. Leslie Brennan, Stafford, England, but he has been named a Queen Elizabeth — scientist. Dr. Taylor, U. of M '57 spent two years in post graduate work in England, and will continue research in children's diseases in New York University.

☆

John Neufeld, M.D., recently returned from post graduate work at the Henry Ford Hospital, announces the opening of his office — 913 Boyd Bldg., phone WH 2-1712. Practice is restricted to Obstetrics and Gynaecology.

☆

Marcia Edna Judith, infant daughter of Dr. and Mrs. E. G. Jarjour, and first grandchild of Dr. and Mrs. E. J. Jarjour, was christened Sunday in St. Emile's Church.

☆

Dr. and Mrs. Patrick H. McNulty announce the engagement of their youngest daughter, Marjorie Ann to Mr. Noel J. Pritchard, son of Mr. and Mrs. Russel M. Pritchard. The wedding to be June 3rd, 1961.

☆

Dr. and Mrs. K. M. Wakefield, Coopertown, N.D., happily announce the arrival of their second son, Charles Paul, March 9, 1961.

☆

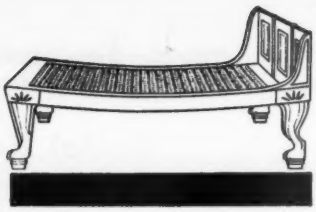
Dr. and Mrs. John D. Culligan proudly announce the birth, April 15, 1961, of John Patrick, their third son. How about a couple of dish washers, Jack?

☆

Dr. and Mrs. Victor Cherniak report the birth of their second daughter, Sharon Debra on April 25th, 1961, at Johns Hopkins Hospital, Baltimore, Maryland.

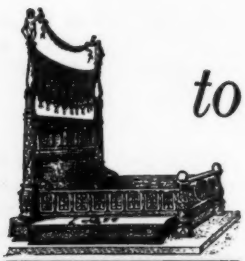
☆

Dr. and Mrs. Charles Mongeon, Sioux Falls, S.D., welcome Paul Michael, April 2, 1961.

Whatever the 

circumstances

the simple way



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Questions and Answers Page

In order to keep the medical profession informed as fully as possible in all matters relating to Association business, medical economics and prepaid medical care, this page welcomes questions pertaining to these fields.

Question:

Is it true that any hospital with three doctors or more may have its own Tissue Committee independent of the Area Tissue Committee?

Answer:

The Executive of the M.M.A. has voted that all hospitals outside Metro Winnipeg and Brandon are under the jurisdiction of the Area Tissue Committee of the district concerned. Rural hospitals may have local tissue committees in addition if they wish, but their official reports will go to the Area Tissue Committee for processing.

Question:

Are Area Tissue Committees now active?

Answer:

Committees have now been appointed and the suggestion of the Tissue Committee was followed to establish five areas as mentioned in the November 1960 "Review." The headquarters of the committee is considered to be the locale of the Chairman.

District No. 1: Between the Lakes converging to Winnipeg and then East of the Red River and South to Highway 23, excluding Metropolitan Winnipeg.

District No. 2: Central District Medical Society plus Southern District Medical Society.

District No. 3: To include Brandon and District Medical Society and Northwestern District Medical Society.

District No. 4: Northern District Medical Society.

District No. 5: North of 53 District Medical Society.

Hospitals in the respective areas have been notified of the Chairman's name and address and it is anticipated that the Chairmen are now receiving copies of the pathologists' reports from the hospitals concerned.

Forms have been developed for the use of the hospitals and the Area Tissue Committees and they have been distributed to the parties concerned.

A suggested outline of procedure was drafted for the use of the Area Tissue Committees and this has been used in preliminary discussions to set up the Committees and should prove useful in their continuing functions.

Practical experience may indicate the necessity to revise Administrative procedures and also the various forms.

The following are the members of the Area Tissue Committees:

No. 1

Dr. W. S. Reid, Selkirk (Chairman)
Dr. I. J. Reid, Selkirk
Dr. T. F. Beveridge, St. Pierre
Dr. F. P. Doyle, Ste. Anne
Dr. E. Johnson, Selkirk

No. 2

Dr. G. W. Hamlin, Portage la Prairie (Chairman)
Dr. G. M. Black, Portage la Prairie
Dr. T. W. D. Miller, Oakville
Dr. W. H. C. North, Carman
Dr. S. S. Toni, Altona
Dr. H. W. Penner, Winkler (Alternate)

No. 3

Dr. H. C. Stevenson, Minnedosa (Chairman)
Dr. J. Hendry, Brandon
Dr. R. S. Harris, Virden
Dr. J. D. McMillan, Oak River
Dr. G. E. Dow, Killarney

No. 4

Dr. B. E. Symchych, Dauphin (Chairman)
Dr. L. V. Jonat, Swan River
Dr. P. W. Hopper, Grandview
Dr. A. R. Dick, McCreary
Dr. M. K. Brandt, Dauphin

No. 5

Dr. Percy Johnson, Flin Flon (Chairman)
Dr. J. Leicester, The Pas
Dr. J. B. Johnston, Thompson
Dr. Harvey McNicol, Flin Flon
Dr. P. Lommerse, The Pas.

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1. VAGISEC liquid and jelly penetrate and dissolve vaginal mucus, exposing even deeply embedded trichomonads.

2. VAGISEC's three active ingredients* permeate the cell's membrane, remove waxes and lipids, denature proteins.

3. Water is forced through the weakened cell wall, causing trichomonad to swell and explode. All within 15 seconds of contact.

Specific therapy for vaginal trichomoniasis: VAGISEC* liquid & jelly. "Many other chemicals stop motion and we have assumed that the organisms are dead, but with [VAGISEC] there can be no doubt, since only fragments remain."[1]

The first office treatment with VAGISEC brings immediate symptomatic relief. With the very first office treatment, Decker[2] achieved *immediate* relief of acute symptoms in all 64 cases of acute trichomoniasis studied.

Cure rates as high as 96% with VAGISEC confirmed by negative cultures for three consecutive months. Roberts and Sullivan[3] successfully treated 96% (48 of 50) vaginal trichomoniasis patients with VAGISEC, all of whom remained flagellate free, as proved by repeated negative cultures for three months after treatment. Giorlando and Brandt,[4] and Weiner[5] were equally successful with VAGISEC, curing 93.1% (54 patients of 58), and 90.2% (46 patients of 51) respectively, by means of the VAGISEC technique.

To prevent re-infection — RAMSES* for the husband. As Romney[6] points out, ". . . therapy which is directed solely towards the female patient is unrealistic and ineffectual." Husbands readily cooperate when you prescribe RAMSES, the prophylactic with "built-in" sensitivity.

References: 1. Davis, C. H.: West. J. Surg. *63*:53 (Feb.) 1955. 2. Decker, A.: New York J. Med. *57*:2237 (July 1) 1957. 3. Roberts, C. L., and Sullivan, J. J.: West. Med. *1*:12 (Apr.) 1960. 4. Giorlando, S. W., and Brandt, M. L.: Am. J. Obst. & Gynec. *76*:666 (Sept.) 1958. 5. Weiner, H. H.: Clin. Med. *5*:25 (Jan.) 1958. 6. Romney, S. L.: M. Sc. *8*:235 (Aug. 25) 1960.

*Trade-marks

VAGISEC* liquid and jelly

**Active ingredients in VAGISEC liquid:* Polyoxyethylene nonyl phenol, sodium ethylene diamine tetra-acetate, sodium dioctyl sulfosuccinate. In addition, VAGISEC jelly contains alcohol 5% by weight.

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PHYSICIANS' ART SALON

at

C.M.A. CONVENTION

June 20th, 21st, 22nd and 23rd, 1961

MONTREAL'S QUEEN ELIZABETH HOTEL

Canadian physicians and medical undergraduates with art or photographic hobbies are cordially invited to enter and compete for awards in the 1961 Physicians' Art Salon to be held at Montreal's Queen Elizabeth Hotel, from June 20 - 23. Again sponsored by the Canadian pharmaceutical firm, Frank W. Horner Limited, the Physicians' Art Salon will mark its 17th year as a popular feature at the C.M.A. Annual Meeting.

CONDITIONS OF ENTRY

Entries will be accepted in three sections —

1. Fine Art
2. Monochrome Photography
3. Colour Photography

The Fine Art section is further subdivided into three categories — Traditional, Contemporary (Modern) and Portrait. Classification into these categories is done by the judges. There is no restriction on media, — oil, tempera, gouache, water colour, charcoal, pencil, or dry brush is acceptable in each.

Each exhibitor may submit up to three entries in the Fine Art and Colour Photography and four in Monochrome Photography. Exhibitors may enter up to the limit in one or more sections. There is no charge. All costs, including transportation to and from Montreal, will be borne by Horner.

JUDGING AND AWARDS

All accepted entires will be displayed in the Salon and then judged for awards by a competent jury selected by the Art Salon Committee.

TO OBTAIN ENTRY FORM

Any physician or medical undergraduate may obtain an entry form and complete details from the sponsor at P.O. Box 959, Montreal, Quebec. A short note or post card will bring the form along with complete instructions on how to prepare and ship your entries.

ART SALON CALENDAR

The Physicians' Art Salon Calendar, an attractive desk piece based on Salon exhibits will again be prepared by Frank W. Horner Limited. The Calendar reproduces selections from the award winners and is distributed to all physicians in Canada, with the compliments of the Company.

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HOSPITAL MEETINGS

Hospital	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Children's	12:00 Surgical Rounds	10:00 Staff Rounds "B" Service 12:00 Postgraduate Seminars	9:30 Staff Rounds "C" Service 11:00 Clinical Path. Conference	11:00 Grand Ward Rounds	10:00 Staff Rounds "A" Service	9:00 Newborn Conference
Deer Lodge	Clinical Luncheon (1st Monday)			11:00 Ward Rounds		
Grace	12:00-2:00 p.m. Weekly Seminar	Clinical Luncheon (3rd Tuesday)		12:00-2:00 p.m. Weekly Seminar		
Misericordia		2. Clinical Luncheon				
Municipal			7:30 p.m. Review of Deaths (2nd Wednesday)			8:30 Clinical Staff Conf. and Ward Rounds
St. Boniface	11:00 Paediatric Rounds	11:00 Surgical Rounds	11:00 Grand Rounds 11:00 Cardio-Pulmonary Conf. (2nd Wednesday)	8:00 Orthopedic Rounds 11:00 Tumor Clinic 11:00 Obstetrical Rounds 12:00 Clinical Luncheon (2nd & 4th Thurs.	11:00 Medical Rounds 11:00 Cardio-Pulmonary Conf. (4th Friday)	
St. Boniface Sanatorium		12:30 Clinical Luncheon (2nd Tuesday)				
Victoria		Tissue Committee (1st Tuesday)			3. Clinical Luncheon 4. Active Med. Staff	
Winnipeg General		11-12:00 Medical Ward Rounds	9-10:00 Tumor Clinic 11:30-12:30 Chest Conference	12:15 Clin. Lunch. (1st & 3rd Thurs.)	11:30-12:30 Neurological Conference 4:00-5:00 Surgical & Service Rounds	10:00 Surgical Conference 11:00 O.P.D. Conference 11:00 Obstetrics & Gynaecology Conference
Brandon General			Medical Staff Lunch (Wed. prior to 2nd Tues. each month)			10:00-noon Clinical Drs. from S.W. Manitoba invited (Nov. to May)

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Scurvy in Manitoba

Scurvy is generally considered to be a preventable disease. In spite of this, some twelve cases a year have been admitted to the Children's Hospital of Winnipeg each year since 1956. Similar increase in the incidence of scurvy has been reported from other centres in Canada especially Newfoundland, and from many U.S. centres, especially from the southern states. It is important that in the counselling of mothers on the care of their infants that special care be taken to be sure that adequate information is supplied in regard to the addition of vitamins to the infant's diet.

It is requested that any Manitoba physician who recognizes a case of scurvy report the case to either Dr. Ella Peters, Department of Health and Public Welfare, Norquay Bldg., Winnipeg, or to the Department of Paediatrics, Manitoba Medical College, Emily and Bannatyne, Winnipeg. The Committee on Nutrition of the Canadian Paediatric Society is undertaking a detailed study of all cases of scurvy in Canada in 1961 in the interest of better health for Canada's children.

Harry Medovy, M.D.,
Chairman, Committee on Nutrition,
Canadian Paediatric Society.

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DEPARTMENT OF HEALTH & PUBLIC WELFARE

NOTIFIABLE DISEASE PICTURE

LIST OF DEATHS FROM NOTIFIABLE DISEASES
March, 1961

URBAN: Cancer, 107; Diarrhoea and Enteritis, 2; Diphtheria, 1; Pneumonia, Lobar (490), 4; Pneumonias (other forms), 31; Tuberculosis, 5. Other deaths under 1 year, 22. Other deaths over 1 year, 389. Stillbirths, 29. Total, 590.

RURAL: Cancer, 20; Diarrhoea & Enteritis, 1; Pneumonia, Lobar (490), 1; Pneumonias (other forms), 8; Tuberculosis, 4. Other deaths under 1 year, 7. Other deaths over 1 year, 142. Stillbirths, 13. Total, 196.

INDIANS: Pneumonias (other forms), 1. Total 1.

Unorganized Miscellaneous

One case of bacillary dysentery.

General

Generally speaking, the incidence of notifiable diseases in the Province was low. Large numbers of reports are still being received on infectious hepatitis and scarlet fever continues to be prevalent. It is worth noting, that diphtheria still occurs sporadically from time to time, with occasional small outbreaks and that this month there has been a death attributable to this cause.

North of 53 District

No communicable diseases were reported.

Northwestern District

Reports were received of nine cases of infectious hepatitis, one scarlet fever, and one meningococcal infection.

Northern District

One case of scarlet fever.

Winnipeg District

The following cases were reported: Fifty-three infectious hepatitis, eight scarlet fever, five bacillary dysentery and one each of brucellosis, diarrhoea of the newborn, meningococcal infection and meningitis due to other and unspecified.

Central District

A report was received of one case of diphtheria. This was a twenty-nine year old white female, in the City of Portage la Prairie. No record of any previous immunization could be obtained. There were also four cases of infectious hepatitis and one scarlet fever.

Brandon District

Reports were received on two cases of diphtheria. These cases occurred in Cypress south in Siblings, age four and a half and two and a half. There is no record of either having been immunized. The older child died of the disease. Reports were also received of twenty-one cases of infectious hepatitis and eleven cases of scarlet fever.

Southern District

Four cases of infectious hepatitis.

Detailmen's Directory

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